RASG-MID/6

Bahrain, 26-28 September 2017

الاجتماع السادس للمجموعة الإقليمية لسلامة الطيران بالشرق الأوسط

(مملكة البحرين، 26 – 28 سبتمبر 2017)

Civil Aviation Affairs (CAA)

شؤون الطيران المدنى

INTERNATIONAL CIVIL AVIATION ORGANIZATION

REPORT OF THE SIXTH MEETING OF THE REGIONAL AVIATION SAFETY GROUP – MIDDLE EAST

(RASG-MID/6)

(Bahrain, 26 – 28 September 2017)

The views expressed in this Report should be taken as those of the Regional Aviation Safety Group and not of the Organization. This Report will, however, be submitted to the ICAO Council and any formal action taken will be published in due course as a Supplement to the Report.

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

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PART I – HISTORY OF THE MEETING

1. PLACE AND DURATION

1.1 The Sixth meeting of the Regional Aviation Safety Group – Middle East (RASG-MID/6) was hosted by Bahrain Civil Aviation Affairs, at the Movenpick Hotel in Bahrain, 26 – 28 September 2017.

2. OPENING

2.1 H. E. Mohammed Thamir Al-Kaabi, Under-Secretary for Civil Aviation Affairs welcomed all the participants to Bahrain and wished them a fruitful meeting and pleasant stay in Bahrain.

2.2 Mr. Mohamed Khalifa Rahma, Regional Director, ICAO Middle East (MID) Office welcomed all the participants and expressed ICAO's sincere gratitude and appreciation to the Ministry of Transportation & Telecommunication of Bahrain and the Civil Aviation Affairs for the generous hospitality extended to all participants. Mr. Rahma highlighted that the priorities identified by the RASG-MID helped all stakeholders to work towards the achievement of the agreed safety targets included in the MID Region Safety Strategy, which was established in line with the Global Aviation Safety Plan (GASP).

2.3 Mr. Rahma invited all stakeholders to work together in a cooperative/collaborative manner to overcome the challenges in the Region. He underlined that the MID Region NCLB Strategy will be presented to the DGCA-MID/4 (Muscat, Oman, 17 – 19 October 2017) meeting for endorsement. The Strategy incorporates the agreed commitments of the Doha Declaration, and aims at fostering the achievement of the regional targets. It supports the implementation of the GASP as the basis to develop action plans that define the specific activities.

2.4 Mr. Ismaeil Mohammed Al Blooshi, Chairperson of RASG-MID, Assistant Director General, Aviation Safety Affairs Sector, General Civil Aviation Authority, UAE, thanked Bahrain for hosting the RASG-MID/6 meeting. He highlighted the need for effective participation of all stakeholders within the framework of RASG-MID in order to achieve the desired objectives and goals.

3. ATTENDANCE

3.1 The meeting was attended by a total of sixty (60) participants from eleven (11) States (Bahrain, Egypt, Iraq, Jordan, Kuwait, Oman, Saudi Arabia, Sudan, Turkey, UAE and United States) and seven (7) International Organizations/Industries (ACI, Airbus, CANSO, EMBRAER, IATA, IFATCA and MIDRMA). The list of participants is at **Attachment A** to the Report.

4. OFFICERS AND SECRETARIAT

4.1 The meeting was chaired by Mr. Ismaeil Mohammed Al Blooshi, Assistant Director General, Aviation Safety Affairs Sector, General Civil Aviation Authority, UAE.

4.2 Mr. Mohamed Khalifa Rahma, ICAO Middle East Regional Director acted as the Secretary of the meeting, assisted by the following ICAO MID Regional Officers:

Mr. Mohamed Smaoui	-	Deputy Regional Director (DRD)
Mr. Mashhor Alblowi	-	Regional Officer, Flight Safety (FLS)
Mr. Elie El Khoury	-	Regional Officer, Air Traffic Management/Search and Rescue (ATM/SAR)

4.3 The meeting was also supported by Mr. Martin Maurino, Safety, Efficiency and Operations Officer, ANB/SAF/OPS from ICAO Headquarters in Montreal.

5. LANGUAGE

5.1 Discussions were conducted in English and 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: Global developments related to Aviation Safety

Agenda Item 3: Regional Performance Framework for Safety

Agenda Item 4: RASG-MID Working Arrangements

Agenda Item 5: Update from and Coordination with MIDANPIRG

Agenda Item 6: Future Work Programme

Agenda Item 7: Any other Business

7. CONCLUSIONS AND DECISIONS – DEFINITION

7.1 The RASG-MID 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 and its stakeholders/partners, or on which further action will be initiated by the Secretary in accordance with established procedures; and

b) **Decisions** relate solely to matters dealing with the internal working arrangements of the Group and its subsidiary bodies.

8. LIST OF DRAFT CONCLUSIONS AND DRAFT DECISIONS

CONCLUSION 6/1: GLOBAL AVIATION SAFETY PLAN (GASP)

CONCLUSION 6/2: SAFETY MANAGEMENT IMPLEMENTATION

CONCLUSION 6/3: REGIONAL SAFETY OVERSIGHT ORGANIZATIONS

CONCLUSION 6/4: SHARING OF SAFETY RECOMMENDATIONS

CONCLUSION 6/5: ADOPTION OF ISAGO AND IGOM FOR GROUND HANDLING OPERATIONS

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DECISION 6/15:	*RASG-MID SAFETY ADVISORY (RSA)– WAKE TURBULENCE IN THE RVSM AIRSPACE*
DECISION 6/16:	*RASG-MID SAFETY ADVISORY-04 (RSA 04)*

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.

REPORT ON AGENDA ITEM 2: GLOBAL DEVELOPMENT RELATED TO AVIATION SAFETY

Global Safety Update

2.1 The subject was addressed in PPT/1. The meeting was provided with an update on the status of aviation safety, including the global accident rates for 2016, based on the annual ICAO *Safety Report*, the status of effective implementation of the eight Critical Elements (CEs) of a safety oversight system at the global and regional levels, key points in Amendment 1 to Annex 19, *Safety Management*, tools to support the implementation of State Safety Programmes (SSPs), the concept of Global Aviation Safety Oversight Systems (GASOS), and the latest developments in the revision of the GASP, for the 2020-2022 Edition.

Global Aviation Safety Plan (GASP) Workshop and Update

2.2 A GASP Workshop was conducted by the Secretariat. The Workshop was comprised of four sessions. The first session introduced the 2017-2019 Edition of the GASP, and included its purpose and the role of States, Regions and Industry with regards the regional and national safety planning activities. The second session presented the global aviation safety roadmap and described how stakeholders should use the plan to assist them in achieving the GASP objectives. The third session was comprised of a practical exercise. The participants were divided into groups and tasked with reviewing the regional safety initiatives of the roadmap, with the goal of selecting initiatives relevant to the MID Region. One group was tasked with the review of the safety initiatives in sub-phase IA of the roadmap, which deals with the implementation of an effective safety oversight system and focuses on critical elements (CEs) one through five. The second group was tasked with the review of the safety initiatives in sub-phase IB, which addresses CEs six through eight. The third group was tasked with the review of the safety initiatives in phase II of the roadmap, which deals with SSP implementation. The groups conducted the review and debriefed the meeting on their conclusions during the fourth session of the Workshop. Each group provided the reasons for selecting a set of initiatives for the Region. The meeting noted that the goal of the exercise was to provide participants with a hands-on experience in using the roadmap. The meeting urged States to conduct a similar exercise to develop a national aviation safety plan, in line with the GASP and the MID Region Safety Strategy.

2.3 The subject of the GASP update was addressed in WP/2 presented by the Secretariat. The meeting noted the changes presented in the 2017-2019 Edition of the GASP, as well as the role of the GASP in guiding the development of regional, sub-regional and national aviation safety plans.

2.4 Based on the above, the meeting agreed to the following Conclusion:

CONCLUSION 6/1: GLOBAL AVIATION SAFETY PLAN (GASP)

That, States:

a) *be requested to establish a national aviation safety plan, including goals and targets consistent with the MID Region Safety Strategy, and in line with the GASP objectives, including the global aviation safety roadmap, and based on their operational safety needs; and*

b) *be invited to provide ICAO feedback on the new global aviation safety roadmap and suggestions for the future 2020 -2022 edition of the GASP via email to GASP@icao.int*, by March 2018.

Enhancing Support for Safety Management Implementation

2.5 The subject was addressed in WP/3 presented by the Secretariat. The meeting noted the progress made by ICAO to support the implementation of SSP and SMS, as a follow up to Amendment 1 to Annex 19, which will become applicable on 7 November 2017. This included the following points:

a) a revision to the *Safety Management Manual (SMM)* (Doc 9859);
b) the development of an ICAO Safety Management Implementation website with examples to complement the SMM;
c) updated SSP tools;
d) an update to the ICAO Safety Management Training Programme; and
e) ICAO SSP implementation promotional activities.

2.6 The meeting agreed to the following Conclusion:

CONCLUSION 6/2: SAFETY MANAGEMENT IMPLEMENTATION

That *States, regional and international organizations are invited to share tools and examples, which support effective safety management implementation, to be considered for posting on the ICAO safety management implementation website.*

Progress Report on the Implementation of ICAO USOAP-CMA

2.7 The subject was addressed in WP/4 presented by the Secretariat. The meeting was provided with a progress report on the implementation and activities of the Universal Safety Oversight Audit Programme Continuous Monitoring Approach (USOAP-CMA) during 2016, and the planned activities for 2017 and 2018. It was highlighted that the average effective implementation (EI) score for the MID Region was above the world average. It was also noted that no State in the MID Region had a Significant Safety Concern (SSC) at the time of the meeting.

2.8 The meeting noted that ICAO issued a safety report on the USOAP CMA activities conducted over a three-year period starting with the launch of the CMA on 1 January 2013 until 31 December 2015. This report not only provides statistical data, but also highlights a number of challenges, which States continue to face. The report is available on the ICAO public website (http://www.icao.int/safety/CMAForum).

2.9 It was highlighted that in September 2017, amended SSP-related PQs were published by ICAO to reflect Amendment 1 to Annex 19, the fourth edition of the SMM and lessons learned to date. Although Amendment 1 does not become applicable until November 2019, selected States will be approached by ICAO with a view to performing audits including the amended SSP-related PQs in 2018 and 2019 on a voluntary, but non-confidential basis. As of 2020, ICAO will perform audits using the amended SSP-related PQs on States meeting the criteria to be established by ICAO, in line with the 2020-2022 edition of the GASP.

2.10 The meeting urged States to fulfil their obligations under the USOAP CMA Memorandum of Understanding (MOU) and to take actions as needed to provide up-to-date information on their safety oversight systems; and reiterated the RASG-MID/5 Conclusion 5/1 on the subject.

Proposed Global Strategy and Action Plan for the Improvement of RSOOs and the establishment of GASOS

2.11 The subject was addressed in WP/5 presented by the Secretariat. The meeting noted the outcomes of the Forum on RSOOs for Global Aviation Safety, co-organized by ICAO and the European Aviation Safety Agency (EASA), held from 22 to 24 March 2017 in Ezulwini, Swaziland. It was highlighted that the Forum supported the proposed global strategy and action plan for the improvement of RSOOs and the establishment of a global system for the provision of safety oversight, which included the new concept of GASOS. The meeting recognized the benefits of the global safety strategy and action plan to improve RSOOs. Although the establishment of a global system for the provision of safety oversight was deemed a new idea for the meeting to consider, it was noted that the study of the proposed GASOS was valuable and that the RASG was a good venue to discuss this concept. The meeting supported the conduct of the study and agreed to the following Conclusion:

CONCLUSION 6/3: REGIONAL SAFETY OVERSIGHT ORGANIZATIONS

That, States support:

a) the proposed global strategy and action plan to improve RSOOs; and

b) the conduct of a study related to the proposed global aviation safety oversight system (GASOS).

RASG-EUR Activities and Achievements

2.12 The subject was addressed in PPT/2 presented by the Vice Chair RASG-EUR who provided a briefing on the RASG-EUR activities and achievements. The meeting thanked Mr. Haydar Yalcin for his contribution and for sharing the RASG-EUR experience.

RASG Activities in other Regions

2.13 The meeting was apprised of the RASG activities in other Regions (IP/3 refers).

REPORT ON AGENDA ITEM 3: REGIONAL PERFORMANCE FRAMEWORK FOR SAFETY

Follow-up on the RASG-MID/5 and RSC/5 Conclusions and Decisions

3.1 The subject was addressed in WP/6 presented by the Secretariat. The meeting reviewed the progress made for the implementation of the RASG-MID/5 and RSC/5 Conclusions and Decisions as at **Appendix 3A**.

Outcome of the RSC/5

3.2 The subject was addressed in WP/7 presented by the Secretariat. The meeting was apprised of the outcome of the Fifth meeting of the RASG-MID Steering Committee (RSC/5) held at the IATA Africa/Middle East Regional Office, Amman, Jordan, 23 – 25 January 2017.

3.3 With respect to safety recommendations related to past investigation activities, which could be very beneficial to address the Focus Areas and Emerging Risks in the MID Region, the meeting urged States to share their safety recommendations after the completion of investigation and agreed to the following Conclusion:

CONCLUSION 6/4: SHARING OF SAFETY RECOMMENDATIONS

That,

a) States be urged to share their Safety Recommendations after investigation of accidents and incidents; and

b) MID-SST to coordinate with MID-ASRT, ICAO and stakeholders the development of a RASG-MID Safety Advisory to consolidate a set of safety recommendations addressing the Focus Areas and Emerging Risks in the MID Region.

3.4 With regard to the Ground Handling operations, which are considered as a source of significant personnel safety and aircraft/equipment damage concerns, the meeting agreed that the complexity of ground handling operations has increased with widespread airport development and traffic growth, corresponding to larger numbers and size of aircraft. Accordingly, the meeting agreed to the following Conclusions emanating from the RGS WG/3 meeting:

CONCLUSION 6/5: ADOPTION OF ISAGO AND IGOM FOR GROUND HANDLING OPERATIONS

That, States be invited to:

a) encourage airlines and aerodrome operators to implement the procedures contained in the IATA Ground Operations Manual (IGOM) for harmonization purpose and to improve safety of Ground Handling Operations; and

b) use the IATA Safety Audit for Ground Operations (ISAGO) as a source of safety data which provide complementary information for the safety oversight activities of ground handling operations services.

CONCLUSION 6/6: DEVELOPMENT OF ADDITIONAL GROUND HANDLING OPERATIONS PROVISIONS

That, ICAO be invited to consider the development of additional Ground Handling Operations provisions.

CONCLUSION 6/7: EXPANSION OF THE RSP SCOPE

That, ICAO be invited to consider the expansion of the ICAO Runway Safety Programme (RSP) scope to include the movement area (including aprons).

Preliminary Review of the Sixth MID Annual Safety Report (MID-ASR)

3.5 The subject was addressed in PPT/3 presented by the MID-ASRT Rapporteur. The meeting was apprised of the preliminary results of the MID-ASR. Based on the analysis of the reactive safety information for the period 2012-2016, and in accordance with the agreed matrix used for the assessment of the different accident categories (frequency x severity), the accident categories are classified in the following order:

1. Runway Safety (RS); and
2. System Component Failure.

3.6 The meeting noted that neither Controlled Flight Into Terrain (CFIT) nor Loss of Control In Flight (LOC-I) related accidents occurred in the MID Region during the period 2012-2016.

3.7 With respect to the proactive safety information, the meeting noted the following:

- The average Regional USOAP EI score is 70.5% which is above the world average of 64.71%;
- 76.92% of the MID States have achieved the target of 60% EI (10 States); and 3 State have EI below 60%; and
- No SSC is registered in the MID Region.

Accidents and Incidents Analysis Working Group (AIA WG)

3.8 The subject was addressed in WP/8 presented by the Secretariat. The meeting noted with concern the challenges facing the Group including: 1) the low level of participation in the AIA WG/2 meeting particularly by the AIA WG Core Team members, 2) availability or reporting of data, and 3) the Chairman of the Group is no longer able to continue with the assignment.

3.9 Taking into consideration the difficulties facing the Group, and that the AIA WG was established under the MID-ASRT to review and analyse on an annual basis the accidents and incidents that occurred in the MID Region, the meeting agreed to dissolve the AIA WG and to amend the MID-ASRT Terms of References (TORs) to include the main tasks assigned previously to the AIA WG, which are directly related to the identification of focus areas and emerging risks. Accordingly, the meeting agreed to the following Decisions:

DECISION 6/8: DISSOLUTION OF THE AIA WG

That,

a) the AIA WG is dissolved; and
b) the RASG-MID Organizational Structure contained in the RASG-MID Procedural Handbook be amended accordingly.

DECISION 6/9: REVISED TERMS OF REFERENCE (TORS) OF THE MID-ASRT

That, considering the dissolution of the AIA WG:

a) the MID-ASRT develop revised version of its Terms of References (TORs) for review and endorsement by the RSC; and

b) face-to-face meetings of the MID-ASRT be organized on an annual basis.

3.10 In connection with the above, the meeting agreed that for an improved efficiency, the composition of the MID-ASRT should encompass additional active members from States and industry partners.

3.11 The meeting noted that the first MID-ASRT meeting would be held in Cairo (4-5 February 2018), which is the date reserved initially for the AIA WG/3 meeting. The work programme of the meeting will include the revision of the TORs in order to be endorsed by the RSC/6 meeting in Cairo (25-27 June 2018). It was highlighted that the MID-ASRT will be held back-to-back with the MID-SST/4 meeting (6-8 February 2018).

3.12 With respect to the availability of investigation reports, the meeting recalled the Annex 13 provisions related to the release of the Final Reports on accidents and serious incidents. The meeting agreed that for the analysis of accident data, it is very important that the Final Reports be available for the MID-ASRT. Accordingly, the meeting agreed to the following Conclusion:

CONCLUSION 6/10: ACCIDENT AND SERIOUS INCIDENTS FINAL REPORTS

That,

a) States be urged to comply with Annex 13 provisions related to the release of Final Reports on accidents and serious incidents; and

b) for the accidents and serious incidents involving aircraft of a maximum mass over 5700 kg, a copy of the Final Report should be sent to the ICAO HQ and MID Regional Office.

3.13 In line with the above, the meeting agreed that States should share their analyses related to the following top 5 areas of concern identified by IATA: Near midair Collision (NMAC), Loss of Separation, Take off Clearance with Runway in use, Wake Turbulence –Encountered and Callsign Confusion. Accordingly, the meeting agreed to the following Conclusion:

CONCLUSION 6/11: SHARING OF INCIDENTS ANALYSES

That, States be invited to present to the ASRT/1 meeting their analyses related to the following top 5 areas of concern:

1- Near midair Collision (NMAC)-TCAS RA
2- Loss of Separation
3- Take off Clearance with Runway in use
4- Wake Turbulence -Encountered
5- Callsign Confusion

3.14 With respect to the review/analysis of accidents data, the meeting noted that the AIA WG/2 meeting, through Draft Decisions 2/2 and 2/3 proposed that an Action Group should be established for each Focus Area (RS and SCF) to analyze the accident data (available in the investigation reports) and identify the root causes and contributing factors, as well as the associated

safety recommendations. Considering the dissolution of the AIA WG, the meeting agreed that this task be assigned directly to the MID-ASRT.

MID-RAST Activities

3.15 The subject was addressed in WP/9 presented by the RAST Rapporteur. The meeting was updated on the RAST activities including the status of the progress achieved in the implementation of the DIPs related to LOC-I and CFIT as at **Appendices 3B** and **3C**, respectively.

3.16 With respect to the System/Component Failure (SCF), the meeting recalled that based on the outcome of the RASG-MID/5 meeting, Boeing as the champion was requested to develop new SEI and DIP to address SCF. It was highlighted that Boeing, after coordination with EMBRAER, could not support the development of SEI and DIP due to lack of data from their sides. However, it was underlined that according to the analysis of the ASR, SCF is one of the Focus Areas in the MID Region.

3.17 The meeting noted that, according to IATA, the definition of In-flight Damage (IFD) is "*the damage occurring while airborne, including: Weather-related events, technical failures, bird strikes and fire/smoke/fumes*". The meeting noted that, based on IATA data, a total of four (4) accidents related to IFD occurred in MID Region during the period 2012 - 2016 with top contributing threat factors: Aircraft Malfunction (39%), Wildlife/Birds/Foreign Object (27%), Fire/Smoke (Cockpit/Cabin/Cargo) (18%) and Extensive/Uncontained Engine Failure (15%). Further analysis will be conducted to determine the required actions/recommendations to address the identified contributing threat factors in coordination with the MID-ASRT.

3.18 The meeting agreed that the global priorities (RS, LOC-I and CFIT) should always be addressed within the RASG-MID framework. However, with regard to LOC-I and CFIT, global developments and measures should be followed by the RAST instead of developing new DIPs.

Update on Development and Implementation of SEIs & DIPs related to RGS

3.19 The subject was addressed in WP/10 and WP/11 presented by the RGS WG Chairperson. The meeting noted with appreciation the progress achieved in the implementation of the different SEIs/DIPs related to RGS as at **Appendices 3D, 3E, 3F, 3G** and **3H**.

3.20 The meeting noted that the Safety Advisory related to Safeguarding of Aerodromes was endorsed by the RSC/5 meeting endorsed (RSC Decision 5/2 refers). The meeting noted with appreciation that Egypt will host the Aerodrome Safeguarding Workshop in Cairo, Egypt, (4-6 December 2017). Accordingly, the meeting encouraged States and stakeholders to participate in this Workshop.

3.21 With respect to Wildlife Management and Controls, the meeting noted with appreciation that Sudan offered to host a Workshop on the Wildlife Management Control in September 2018.

3.22 The meeting noted that the RSA on Wildlife Management and Control at **Appendix 3I** was circulated to States and refined. Accordingly, the meeting agreed to the following Decision:

DECISION 6/12: RASG-MID SAFETY ADVISORY - WILDLIFE MANAGEMENT AND CONTROL

*That, the RASG-MID Safety Advisory (RSA/13) on Wildlife Management and Control at **Appendix 3I** is endorsed and be published by the ICAO MID Office.*

3.23 The meeting recalled that the RSA on Laser Attack Safety Guidelines – RSA/12 was issued and published by the ICAO MID Office in March 2017. A revised version of RSA/12 was developed as at **Appendix 3J** to reflect the safety requirements set forth in Annex 14 Vol. I Chapter 5.3.1 related to Protected Flight Zones Elevation with indication of maximum irradiance levels for visible laser beams. Accordingly, the meeting agreed to the following Decision:

DECISION 6/13: AMENDED RASG-MID SAFETY ADVISORY/12 – LASER ATTACK SAFETY GUIDELINES

*That, the revised version of the RASG-MID Safety Advisory (RSA/12) on Laser Attacks at **Appendix 3J** is endorsed and be published by the ICAO MID Office.*

Updates on Certification of Aerodromes and Establishment of Runway Safety Teams

3.24 The subject was addressed in WP/10 presented by the RGS WG Chairperson. The meeting noted that based on the feedback provided by States and the AOP Table of the MID ANP, the aerodromes certification implementation table has been updated as at **Appendix 3K**. The meeting noted that 34 out of the 59 MID States' international aerodromes have been certified, which represents 58%.

With respect to the establishment of Runway Safety Team (RST), the meeting noted that 33 RSTs were established out of 59 required at MID international aerodromes, which represents 56%. The Table at **Appendix 3L** provides the list of MID international aerodromes that established RST.

3.25 With respect to the Procedures for the Air Navigation Services – Aerodromes (PANS-Aerodromes – Doc 9981), the meeting urged States and aerodrome operators to implement the provisions of the PANS-Aerodromes and to publish up-to-date lists of significant differences from this document in their AIP. The meeting urged States to attend the Seminar/Workshop on the implementation of PANS-Aerodromes that will be held in Cairo, Egypt, 8-9 November 2017, back-to-back with the RGS WG/4 meeting.

MID-SST Activities

3.26 The subject was addressed in WP/12 presented by the Secretariat. The meeting noted the progress made by the MID-SST for the implementation of the agreed SEIs.

3.27 The meeting noted that based on a Draft Decision emanating from the MID-SST/3 meeting, the RSC/5 meeting, through Decision 5/4, agreed to a revised set of SEIs, as follows:

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

2- strengthening of States' Safety Oversight capabilities;

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

4- improve implementation of ELP requirements in the MID Region.

3.28 The meeting noted the identified common challenges/difficulties based on the States feedback related to SSP implementation and agreed to the following actions to support the SSP implementation including participation in the ICAO Safety Management for Practitioners Training (SMxP), which will be held in Cairo (14-18 January 2018).

3.29 With regard to SMS implementation at MID International Aerodromes, the meeting noted that the RSC/5 meeting agreed that Saudi Arabia and Egypt work on a proposal for an action plan to be discussed in the RGS WG in order to be further processed by the MID-SST.

3.30 For the newly added SEI related to the implementation of ELP requirements in the MID Region, it was noted with appreciation that UAE will champion the proposed SEI and will develop a questionnaire, in coordination with the ICAO MID Office, to be used as the basis of a survey to assess the implementation of ELP requirements, and agree on the next course of actions.

3.31 The meeting supported the list of actions related to the agreed SEIs as at **Appendix 3M**.

First NCMCs Meeting

3.32 The subject was addressed in WP/13 presented by the Secretariat. The meeting noted that the first NCMCs meeting was held on 11 October 2016 as part of the MID-SST/3 meeting. The meeting was a great opportunity to share experiences, challenges and best practices, which were appreciated by all participants.

3.33 The meeting noted with appreciation that the missions conducted by the ICAO MID Regional Office to the States provided valuable assistance and guidance related to the USOAP-CMA, including the preparation for Audits and ICVMs.

3.34 The meeting supported the conduct of the NCMCs meeting and that this practice should be continued in the future as part of the MID-SST work programme.

IATA Audit Programs (ISAGO-IOSA) Workshop

3.35 The subject was addressed in WP/14 presented by IATA. The meeting was apprised of the outcomes of the IATA's Audit Program (ISAGO-IOSA) Workshop that was organized jointly with the Arab Civil Aviation Commission (ACAC) in Casablanca, Morocco (8-19 July 2017).

SMS Implementation by Air Operators, Maintenance and Training Organizations

3.36 The subject was addressed in WP/12 presented by the Secretariat and WP/15 presented by IATA.

3.37 The meeting recalled that the MID-SST/3 and RSC/5 meetings recognized the need to monitor the status of SMS implementation by air operators, maintenance organizations and training organizations involved in flight training in order to take necessary actions to overcome the challenges faced and improve safety. It was noted that IATA with the support of the ICAO MID Office will provide feedback and a plan of actions to address SMS implementation by air operators.

3.38 The meeting noted that a survey was conducted by IATA to collect information on SMS implementation to ascertain the status of SMS implementation among MID Region operators.

3.39 The meeting agreed that in order to measure and monitor the SMS implementation by air operators, maintenance organizations and training organizations involved in flight training, a specific survey should be developed in coordination between ICAO MID Office and IATA, in order to be sent to the MID States through State Letter. The results of the surveys will be shared with the MID-SST for further coordination with the relevant champions.

SMS Implementation in ATM

3.40 The subject was addressed in WP/16 presented by CANSO. The meeting was apprised of the status of implementation of SMS by the ANSPs in the MID Region and the work carried out by CANSO as Champion of the RASG-MID Safety Enhancement Implementation (SEI) related to SMS Implementation for ATM. The meeting noted that CANSO is developing a plan with a clear objective, goal and detailed actions with clear deliverables and targets that will lead to the achievement of the SEI.

3.41 CANSO provided the meeting with an overview of the EUROCONTROL/CANSO SMS Maturity Survey. The meeting noted that, as agreed during the ATM SG/3 meeting, the MID Office circulated the survey to all MID States and ANSPs urging them to complete the Questionnaire and return it back to CANSO to analyze the replies and share the results at the RASG-MID/6 meeting, or at the SMS Workshop that will take place in Muscat in November 2017. The meeting noted with concern that no feedback was received from any State ANSP. Accordingly, the meeting agreed that the ICAO MID Office send a reminder to States in order to urge their ANSPs to complete the EUROCONTROL/CANSO Standard of Excellence in SMS Questionnaire and send it back to CANSO before the end of October 2017.

3.42 The meeting urged States/ANSPs to attend the CANSO ATM/SMS Workshop (Muscat, Oman, 27-29 November 2017), which will review and analyze the results of the survey.

Bahrain SSP

3.43 The meeting was apprised of Bahrain's experience related to the SSP development (IP/5 refers).

MID Region Safety Targets and Revised MID Region Safety Strategy

3.44 The subject was addressed in WP/17 and PPT/4 presented by the Secretariat.

3.45 The meeting reviewed the revised version of MID Region Safety Strategy. It was noted that the revised strategy was reviewed and supported by the RSC/5 meeting to reflect the GASP 2017-2019 including its Roadmap, as well as the agreed Safety Targets. The revised version of the Strategy is at **Appendix 3N**. Accordingly, the meeting endorsed the revised version of the Strategy and agreed to the following Conclusion:

CONCLUSION 6/14: REVISED MID REGION SAFETY STRATEGY

*That, the revised version of the MID Region Safety Strategy at **Appendix 3N** is endorsed.*

3.46 The meeting noted that the Fourth MID Region Safety Summit & Safety Management Workshop are planned to be held in Riyadh, Saudi Arabia (1-4 October 2017). Accordingly, the meeting agreed that these events are excellent opportunities to revisit the Strategy taking into consideration the latest global developments including the next Edition of the GASP (2020-2022).

3.47 The meeting reviewed the current status of the different Safety Indicators and Targets included in the MID Region Safety Strategy as at **Appendix 3O**.

MENA RSOO

3.48 The subject was addressed in WP/18 presented by the Secretariat. The meeting noted that ACAC submitted a WP on the subject on 23 September 2017 to be presented by ACAC to the RASG-MID/6 meeting. However, ACAC did not attend the meeting.

3.49 In this regard, Saudi Arabia, the host State of the MENA-RSOO, stated the following:

- the MENA RSOO will be independent and governed by its Steering Committee composed of the MENA RSOO member States (both ICAO and ACAC will be part of the Steering Committee);
- Saudi Arabia must be involved in every step of the establishment process;
- The first meeting of the MENA RSOO Steering Committee should be held in Saudi Arabia as the host State;
- all the details (documentation, funding, etc.) related to the establishment and operation of the MENA RSOO should be decided by the Steering Committee; and
- ICAO is an important partner in this initiative and should be always involved in the process.

3.50 Bahrain, Kuwait and UAE supported the position of Saudi Arabia regarding the establishment of MENA RSOO.

3.51 In connection with the above, the meeting agreed that the subject should be presented to the DGCA-MID/4 meeting, Muscat, Oman, (17-19 October 2017) for further consideration.

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

3.52 The subject was addressed in WP/19 and PPT/5 presented by the Saudi Arabia and UAE.

3.53 The meeting recalled that the RASG-MID/5 meeting (Doha, Qatar, 22-24 May 2016) agreed that Strategy for establishment of RAIO(s) needs to be revised in order to reach a mature level of regional cooperation before considering establishment of RAIO(s). It was agreed through Conclusion 5/13, that an ACAC/ICAO joint Workshop be organized in 2017 in order to develop a revised Strategy.

3.54 The meeting noted that the ACAC/ICAO AIG Workshop was successfully held in Jeddah, Saudi Arabia, 25-27 April 2017. A new Draft Strategy was developed by the Workshop. The objective of the new Strategy is to contribute to the improvement of aviation safety in the MENA States by enabling States to conduct effective and independent investigations of aircraft accidents and incidents, and support States in fulfilling their investigation obligations in Annex 13. During the Workshop an AIG Ad Hoc Group was established to finalize the draft of the Strategy for the Enhancement of Cooperation in the Provision of AIG Services in the MENA Region and develop the related Roadmap under the framework of RASG-MID. The Draft Strategy is at **Appendix 3P**.

3.55 The Roadmap at **Appendix 3Q** was developed by the AIG Ad Hoc Group to assist States in the implementation of the Strategy. The Roadmap is a living document, which includes Key Performance Indicators (KPIs) developed for monitoring the implementation to ensure that the Roadmap agreed goals are achieved.

3.56 Based on the foregoing, the meeting reviewed and supported the new Strategy for final endorsement by the DGCA-MID/4 meeting. It was agreed that the Roadmap would be further finalized by the relevant RASG-MID subsidiary bodies and the RASG-MID Steering Committee.

Workshop on the Protection of Accident and Incident Investigation records

3.57 The subject was addressed in WP/20 presented by the Secretariat. The meeting was apprised of the outcome of the Workshop on the Protection of Accident and Incident Investigation Records held in Cairo, 3 - 5 July 2017. The main objective of the Workshop was to assist States in the implementation of Amendment 15 to Annex 13. Accordingly, the meeting encouraged States to take necessary measures to ensure the implementation of Amendment 15 to Annex 13.

RASG-MID Engagement Strategy

3.58 The subject was addressed in WP/21 presented by the Secretariat. The meeting recalled that a Feedback Questionnaire was developed and an ICAO State Letter (ME 4–16/296, dated 23 October 2016) was issued requesting States to complete the Questionnaire. Due to the low level of replies, a reminder letter Ref.: ME 4-17/172 was issued on 7 June 2017. Nine (9) States (Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Oman, Qatar and UAE) and three International Organizations (ACI, CANSO and IATA) have completed the Questionnaire. A summary of the replies received is at **Appendix 3R**.

3.59 The meeting urged States and Stakeholders that have not yet replied to complete the Feedback Form/Questionnaire and send it to the ICAO MID Office.

RASG-MID Work Programme for 2018

3.60 The subject was addressed in WP/22 presented by the Secretariat. The meeting reviewed and updated the Schedule of 2018 safety events as at **Appendix 3S**. The meeting urged all stakeholders to ensure effective coordination of activities with the RASG-MID through the Secretariat.

REPORT ON AGENDA ITEM 4: RASG-MID WORKING ARRANGEMENTS

RASG-MID Working Arrangements

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

4.2 The meeting recalled that, in order to improve the efficiency of the RASG-MID and give enough authority to the RASG-MID Steering Committee (RSC) to advance the work, the RASG-MID/5 meeting agreed that:

- the RSC could approve on behalf of the RASG-MID, as deemed necessary:

  1) the MID Annual Safety Reports; and

  2) RASG-MID Safety Advisories.

- the RASG-MID should meet every 15 to 18 months to allow sufficient time for technical work to be completed by the subsidiary bodies; and the RSC could approve, on behalf of RASG-MID, those Draft Conclusions/Decisions emanating from the subsidiary bodies, which necessitate urgent follow-up action(s).

4.3 The meeting noted that the Fourth MIDANPIRG/RASG-MID Coordination Meeting (MRC/4) held at the Gulf Aviation Academy (GAA), Bahrain, on 25 September 2017, discussed different options related to MIDANPIRG and RASG-MID Working Arrangements, such as convening the MIDANPIRG and RASG-MID back-to-back or combined, have shorter plenary meetings, etc.; however, there was no consensus on any of the proposals, since any change in the governance of the Groups would need a thorough review of their Procedural Handbooks, including the review of the Terms of Reference of the subsidiary bodies (in case they will be given more authority to endorse their own Conclusions/Decisions (with certain conditions), without the need to address these Conclusions/Decisions to the higher level (PIRG, RASG or Steering Groups)).

4.4 The meeting recognized that, in many cases, there is a need for an expeditious decision-making process (fast track, approval by passing, etc). Accordingly, the meeting agreed that the RASG-MID should agree on such procedure and include it in its Procedural Handbook.

4.5 The meeting agreed that the subject should be further addressed by the RASG-MID Steering Committee (RSC), taking into consideration the outcome of the Global Forum on PIRGs and RASGs that will take place in ICAO HQ, Montreal, 13 December 2017.

4.6 The meeting reviewed and updated the list of RASG-MID Members, Alternates and Advisers as at **Appendix 4A**.

4.7 The meeting reviewed and updated the list of the Safety Teams' Focal Points (MID-ASRT, MID-RAST and MID-SST) as at **Appendix 4B**.

4.8 The meeting encouraged States and all RASG-MID partners to support the work of the RASG-MID Safety Teams and actively participate in their undertakings.

REPORT ON AGENDA ITEM 5: UPDATE FROM AND COORDINATION WITH MIDANPIRG

5.1 The subject was addressed in WP/24 presented by the Secretariat. The meeting was apprised of the latest safety-related air navigation activities.

5.2 The meeting recalled that the Third MIDANPIRG/RASG-MID Coordination (MRC/3) meeting (Kuwait, 14 February 2017), and thereafter the MRC/4 meeting (Bahrain, 25 September 2017) reviewed and updated the Table for the subjects of common interest to MIDANPIRG and RASG-MID with the associated leading Group as at **Appendix 5A**.

Reduced Vertical Separation Minima (RVSM)

5.3 The meeting was provided with an overview regarding the MIDRMA tools to improve the monitoring of RVSM implementation. States were invited to visit the MIDRMA website (www.midrma.com) for more information, reports and tools related to the RVSM implementation.

5.4 The meeting was apprised of the MIDRMA activities related to the Minimum Monitoring Requirements (MMR). The meeting noted with appreciation that the MIDRMA developed an Auto Online MMR Tool to enable the Civil Aviation Authorities in the MID Region to check their MMR for each air operator under their responsibility and identify the aircraft that are non-compliant with the Annex 6 requirements for height-keeping performance. Accordingly, the meeting urged States to make use of the Auto Online MMR Tool, available on the MIDRMA website.

5.5 The meeting noted with appreciation that thanks to the MIDRMA efforts, the MID Region achieved the highest percentage of monitored aircraft worldwide (**94%** of aircraft have known Height-Keeping Performance monitoring results).

5.6 The meeting recalled that MIDANPIRG/16 underlined that several FIRs with high volume of traffic continue to report NIL LHDs, which have a negative effect on the computed Targets Level of Safety (i.e.: not representative/realistic). It was highlighted that the level of reporting of LHDs is still far below expectation compared to the volume of traffic, which is mainly due to the reporting culture of the air traffic controllers. In this respect, the meeting urged States to take necessary measures to ensure effective reporting of LHDs by air traffic controllers. The meeting reiterated MIDANPIRG/15 Conclusion 15/6, and encouraged States to develop a simplified LHD Template containing the minimum data necessary to trigger the process of reporting LHDs by the air traffic controllers.

5.7 The meeting noted with concern that some State aircraft were filing "W" in their flight plans while they were not RVSM approved. Accordingly, the meeting urged States to implement necessary measures for granting RVSM approvals to their State aircraft.

5.8 The meeting noted that MIDANPIRG/16 reviewed and endorsed the MID RVSM SMR 2015, which presents evidence that, according to the data and methods used, the key safety objectives as set out by MIDANPIRG, through Conclusion 12/16, continue to be met. The MID RVSM SMR 2016 and 2017 will be presented to MIDANPIRG/17 for endorsement.

Performance Based Navigation (PBN)

5.9 The meeting recalled that Performance Based Navigation (PBN) is the highest priority for the air navigation. The introduction of PBN has met the expectations of the entire aviation community by increasing airspace capacity, improving airport accessibility, ensuring flight safety, and reducing CO_2 emissions. The status of PBN implementation is reflected in the Global Air Navigation Report as well as the Global and Regional Air Navigation Performance Dashboards.

5.10 The meeting noted with concern that PBN implementation in the MID Region is still far below the agreed targets. The main identified challenges impeding the advancement of PBN implementation in addition to the low number of qualified PBN Experts (PANS-OPS, Airspace planner, OPS Approval and Instructors) is the lack of necessary regulations enabling service providers to implement and the air operators to use PBN procedures. Accordingly, the meeting urged States that have not yet done so, to develop/update their civil aviation regulations to cover the PBN requirements.

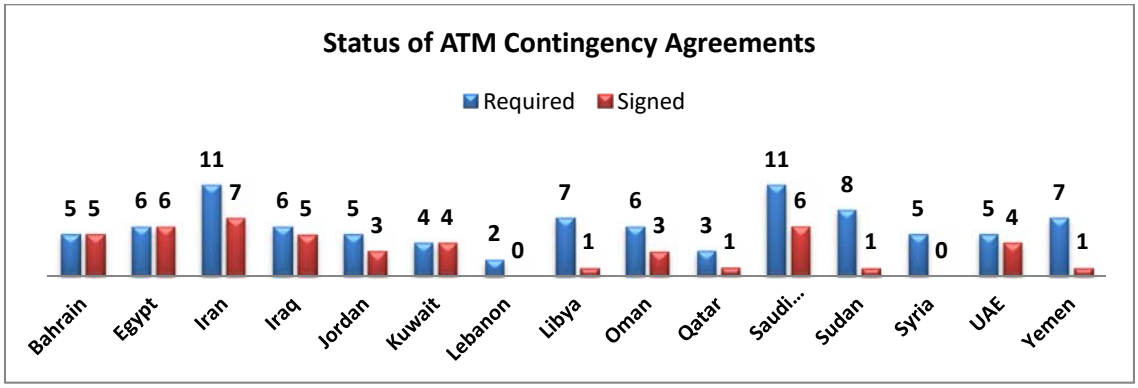
5.11 The meeting noted that the establishment of the MID Flight Procedure Programme is on-going. The Project Document of the MID FPP will be presented to the DGCA-MID/4 meeting. The MID FPP main objective in Phase 1 is building the MID States' capabilities related to PBN, which eventually will foster the PBN Implementation.

Contingency Planning

5.12 The meeting commended the work of the Contingency Coordination Teams (CCTs), established in accordance with the MID Region ATM Contingency Plan, which succeeded in the provision of a forum for sharing information, identifying the challenges and implementation of contingency measures/routes ensuring the safety of air traffic during contingency situations.

5.13 The meeting noted that the ATM SG/3 meeting (Cairo, Egypt, 22-25 May 2017) agreed to the establishment of MID ATM Contingency Plan Action Group to carry out a comprehensive review of the Plan, taking into consideration the experience gained and comments/feedback and proposals received from stakeholders. The Action Group is composed of the ATM SG Chairpersons, experts from Saudi Arabia, UAE, AACO, CANSO, IATA and ICAO.

5.14 The meeting noted that in the MID Region, Area Control Centres (ACCs) have been required to sign Contingency Agreements with their adjacent ACCs to ensure adequate level of coordination between the ATS Units. The meeting reviewed and updated the status of signed ATS Contingency Agreements in the MID Region as reflected in **Graph 1**.



Graph 1

Civil/Military Coordination

5.15 The meeting recalled that the MIDANPIRG/16 meeting encouraged States to benefit from the MID Civil/Military Support Team and coordinate with the ICAO MID Office for the conduct of a Support Team visit, which includes in its work programme a Civil/Military Cooperation Workshop. In this respect, the MIDANPIRG/16 meeting agreed that in the communication with States, the Support Team visits should rather be called Civil/Military Cooperation and FUA National Workshop. Accordingly, the ATM SG/3 meeting agreed that a revised version of the "Objective and Working Arrangements" of the MID Civil/Military Support Team should be presented to the ATM SG/4 meeting.

5.16 The meeting encouraged States to participate in the ICAO/ACAC/CANSO Joint Civil/Military Workshop planned to be held in Algiers, Algeria from 19 to 21 March 2018.

SIDs and STARs Phraseology

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

5.18 The meeting noted that ICAO is developing a Mobile Application for SIDs and STARs Phraseology, which includes animated scenarios, training activities and interactive frequently asked questions. The package is developed to be directly usable by pilots and air traffic controllers.

5.19 The meeting reiterated MIDANPIRG Conclusion 16/20 and urged States to implement the provisions of amendment 7 to ICAO Doc 4444, in particular those related to the SIDs and STARs new phraseologies; and provide the ICAO MID Office with their implementation plan by **15 November 2017**.

5.20 The meeting raised concern related to the implementation of the new phraseologies without a predefined transition plan (similar to the INFPL 2012), which is creating confusion to pilots who are using the old phraseologies within some FIRs and the new phraseologies in other FIRs.

5.21 Based on the above, the meeting agreed that the ICAO MID Office in coordination with the MID ATM Focal Points develop an initial transition plan for the SIDs and STARs new phraseology to be presented to the ATM SG/4 meeting for endorsement.

Search and Rescue (SAR)

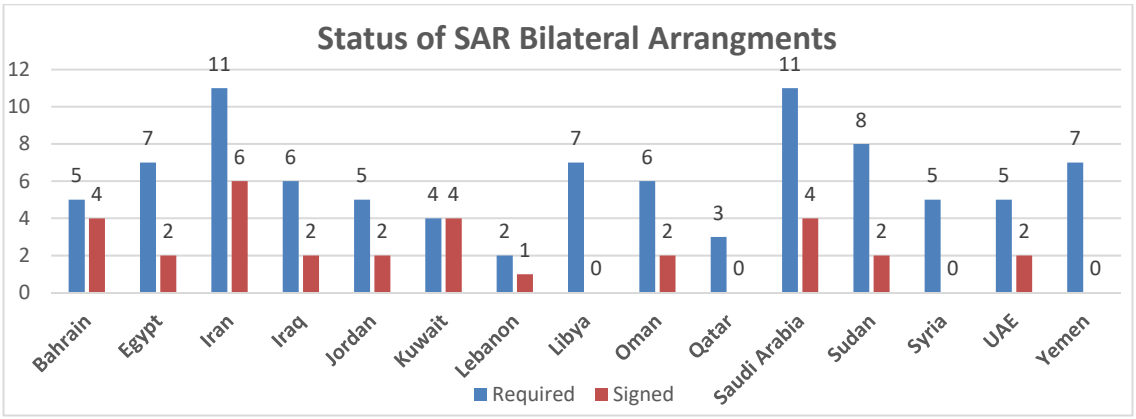
5.22 The meeting noted that the Council at its 206th Session approved the recommendation of the ANC on the amendment to Annex 6 Part 1 in relation to Normal Tracking with applicability of 2018; and the Air Navigation Commission (ANC) at its 200th Session gave final review to amendments to Annex 6 Part 1 in relation to Flight Data Recovery and Distress Tracking with applicability in 2021.

5.23 The meeting noted that in accordance with the USOAP-CMA results, the main findings in the area of SAR are related to lack of:

- effective SAR oversight activities;
- English Language Proficiency for RCC radio operators;
- appropriate training programmes/plans of SAR experts;

- signature of SAR agreements;
- plans of operations for the conduct of SAR operations and SAR exercises;
- provision of required SAR services; and
- non-compliance with the carriage of Emergency Locator Transmitter (ELT) requirements.

5.24 The meeting recalled that the SAR Bilateral Arrangements Template was developed to ensure adequate alerting and coordination procedures are in place between adjacent ATS Units. The status of signed SAR Bilateral Arrangements as of 27 September 2017 is reflected in **Graph 2**:



Graph 2

5.25 The meeting recalled that during the review of the MIDANPIRG/15 Report, the Air Navigation Commission (ANC) suggested that data from USOAP-CMA and other areas be analysed to determine which SARPs were difficult for States to implement so the identified "problematic" SARPs could be addressed. In this respect, based on the USOAP-CMA results, the MIDANPIRG/16 meeting recognized that some deficiencies related to Annex 12 provisions are longstanding and very difficult for States to implement such as the signature of SAR Agreement between States (Reference: Annex 12 Standard 3.1.1 and Recommendation 3.1.5). It was highlighted that the regional effective implementation of the relevant USOAP-CMA Protocol Question (7.517) is only **20%**. The meeting was informed that the updated version of the ANS PQs has been approved with applicability date 1 June 2017.

5.26 The ATM SG/3 meeting reviewed the Initial Draft MID SAR Implementation Plan developed by the MID SAR Action Group (SAR AG), which includes guidance material to support States to comply with global and regional requirements for SAR provision. The Plan includes also the Matrix that will be used for the analysis of the SAR status of implementation in the MID Region and Templates related to the conduct of SAREX.

5.27 The meeting agreed that, the MID SAR Action Group develop, as part of the MID SAR Implementation Plan, necessary guidance for States to support the elimination of the longstanding SAR deficiencies, in accordance with the outcome of MIDANPIRG/16.

Remotely Piloted Aircraft System (RPAS)

5.28 The meeting was apprised of the latest developments related to RPAS. The meeting encouraged States to use the guidance material related to RPAS provided in the ICAO Doc 10019 and the information available on the RPAS webpage: https://www4.icao.int/rpas

5.29 The meeting noted that the personnel licensing provisions related to RPAS will be adopted in 2018.

5.30 The meeting was briefed about the CANSO RPAS activities. The CANSO ANSP Considerations for RPAS Operations information document can be downloaded via the CANSO public link: https://www.canso.org/ansp-considerations-rpas-operations.

5.31 The meeting encouraged States to consider the developments related to RPAS, and take necessary measures for the amendment of the relevant civil aviation regulations and procedures in a timely manner, in order to ensure safe integration of the RPA into the non-segregated airspace.

5.32 The meeting encourage States to participate in the ICAO MID RPAS Workshop that will be held in Dubai, UAE from 20 to 22 November 2017.

5.33 The meeting reiterated Conclusion 5/18 and urged States to report any safety occurrence related to RPA operations to the ICAO MID Regional Office on regular basis.

Wake Turbulence in RVSM Airspace

5.34 The subject was addressed in WP/25 presented by the Secretariat. The meeting was apprised of the ICAO provisions related to Wake Turbulence and Strategic Lateral Offset Procedures (SLOP). The meeting reviewed the Interim Report of the A380/CL604 accident issued by the German Investigation Agency Bundesstelle für Flugunfalluntersuchung (BFU) – Germany, on 17 May 2017.

5.35 The meeting agreed that a RASG-MID Safety Advisory (RSA) related to Wake Turbulence in the RVSM Airspace should be developed by ICAO, UAE and IATA, taking into consideration UAE safety alert 2017-10 dated 5 July 2017; and other existing practices. Accordingly, the meeting agreed to the following Decision:

DECISION 6/15: RASG-MID SAFETY ADVISORY (RSA) – WAKE TURBULENCE IN THE RVSM AIRSPACE

That, a RASG-MID Safety Advisory (RSA) on Wake Turbulence in the RVSM Airspace, be developed by ICAO, UAE and IATA, taking into consideration UAE safety alert 2017-10 dated 5 July 2017; and other existing practices.

5.36 The meeting recognized the need for the amendment of the ICAO provisions related to wake turbulence taking into considerations the measures implemented in Europe and USA. The meeting noted that UAE presented a Working Paper on the subject to the ATMOPS Panel.

Call Sign Confusion (CSC)

5.37 The subject was addressed in WP/26 presented by IATA. The meeting was provided with a progress report on the implementation of the Call Sign Confusion (CSC) Initiative. The meeting commended the work and efforts of the CSC Initiative Team and the support provided by EUROCONTROL.

5.38 The meeting recalled that the ICAO MID Office issued the RASG-MID Safety Advisory (RSA-04) related to CSC, to provide a clear set of guidelines and call sign similarity rules for Aircraft Operators (AOs) and Air Traffic Controllers (ATC) that could reduce the probability of call sign similarity/confusion occurrence. Based on the coordination with EUROCONTROL and the latest developments, the meeting reviewed and endorsed the updated version of the RSA-04 at **Appendix 5C**. Accordingly, the meeting agreed to the following Decision:

DECISION 6/16: RASG-MID SAFETY ADVISORY-04 (RSA 04)

*That, the revised RSA-04 related to call sign confusion at **Appendix 5B** is endorsed.*

5.39 The meeting encouraged States to:

a) assign focal points for Call Sign Confusion;

b) support the CSC initiative ensuring effective cooperation during the implementation phase;

c) follow-up with their operators to implement the procedures for the de-conflicting of call sign similarities in coordination with the CSC Initiative Team; and

d) report call similarity to the following email addresses: MIDCSC@icao.int and MENACSSU@iata.org.

GNSS Vulnerabilities

5.40 The subject was addressed in WP/27 presented by IATA. The meeting noted with concern that IATA members have experienced incidents of interference to GPS navigation during en-route as well as on descent towards precision approach at international airports. The meeting reviewed the reported incidents in the MID Region at **Appendix 5C**.

5.41 The meeting encouraged States to actively participate in the ACAC/ICAO Joint Workshop on GNSS that will be held in Rabat, Morocco from 7 to 8 November 2017.

5.42 The meeting agreed that a RSA on GNSS vulnerabilities should be developed by IATA and ICAO MID Office, taking into consideration the outcome of the ACAC/ICAO Workshop. Accordingly, the meeting encouraged stakeholders to support the development of the RSA on GNSS vulnerabilities.

Airborne Collision Avoidance System (ACAS)

5.43 The subject was addressed in WP/28 presented by the Secretariat. The meeting noted that the status of implementation of the B0-ACAS in the MID Region is **73%** (i.e. **11** States promulgated regulations requiring the carriage of TCAS v.7.1). Accordingly, the meeting urged States, that have not yet done so, to:

a) develop regulations to mandate the carriage of TCAS7.1;

b) ensure that air operators comply with the ICAO requirements related to ACAS; and

c) develop/maintain a database related to the carriage of the TCAS v7.1, in accordance with their national regulations.

Air Navigation Deficiencies

5.44 The subject was addressed in WP/29 presented by the Secretariat. The meeting was apprised of the status of the air navigation deficiencies reported through the MIDANPIRG Air Navigation Deficiencies Database (MANDD). A quantitative analysis of the MID States' air navigation deficiencies is shown in the tables and graphs at **Appendix 5D**.

5.45 The meeting recalled that MIDANPIRG/15, through Conclusion 15/35, urged States to use the MID Air Navigation Deficiency Database (MANDD) for the submission of requests for addition, update, and elimination of Air Navigation Deficiencies, including the submission of a specific Corrective Action Plan (CAP) for each deficiency; and agreed that a deficiency would be eliminated only when a State submit a formal Letter to the ICAO MID Office containing the evidence(s) that mitigation measures have been implemented for the elimination of this deficiency.

5.46 The meeting noted with concern that the majority of deficiencies listed in the MANDD have no specific Corrective Action Plan (CAP). The meeting urged States to:

a) establish and implement an effective mechanism for the review and elimination of deficiencies identified by MIDANPIRG (USOAP-CMA PQ 7.045); and

b) implement the provisions of MIDANPIRG Conclusion 15/35 related to the elimination of Air Navigation Deficiencies, in particular, the submission of a specific Corrective Action Plan (CAP) for each deficiency.

REPORT ON AGENDA ITEM 6: FUTURE WORK PROGRAMME

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

6.2 The meeting agreed that the RASG-MID/7 meeting be held during the first quarter of 2019. The exact dates and venue will be determined by the RSC/6 meeting scheduled to be held in Cairo, Egypt, 25-27 June 2018.

6.3 The meeting noted that the Fourth MID Region Safety Summit will be hosted by Saudi Arabia in Riyadh, 1-4 October 2018.

REPORT ON AGENDA ITEM 7: ANY OTHER BUSINESS

7.1 Nothing has been discussed under this Agenda Item.

APPENDICES

APPENDIX 3A

FOLLOW-UP ON RASG-MID/5 CONCLUSIONS AND DECISIONS

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
CONCLUSION 5/1: ICAO USOAP-CMA IMPLEMENTATION That, States: a) be urged to prioritise and take action as needed to improve their safety oversight system, with particular attention to: i. the implementation of Corrective Action Plans (CAP) and reporting the progress on the On-line Framework (OLF); and ii. the completion of the self-assessments and uploading of the relevant evidences on the OLF; b) are encouraged to request assistance from ICAO, as required.	- Average EI rate for the MID Region had not improved over the last year. - Development/update of CAPs not up-to expectation - Implementation of most Corrective Action Plans (CAPs) had not started. - Possibility of a State's EI rate reducing following an ICAO audit if a State did not maintain or improve its safety oversight system.	State Letter	ICAO	Aug. 16	Reiterated SL ME 4–16/217 dated 16 August 2016
CONCLUSION 5/2: IATA-IOSA PROGRAMME That, States be encouraged to use all sources of safety data for the conduct of their safety oversight activities, including the IATA IOSA results, which provide complementary information for the safety oversight activities; and send their feedback to the ICAO MID Office by **15 October 2016**.	The ANC raised concerns with respect to RASG-MID Conclusion 4/14 regarding the IATA IOSA Programme. It was felt that the use of the term "acceptable means of compliance" was not appropriate and that the wording of the Conclusion may be misleading. The IOSA compliance does not replace a State's oversight activities but rather provided complementary information.	State Letter Feedback	ICAO States	Jul. 16 Oct.16	Closed SL ME 4–16/198 dated 01 August 2016. - Conclusion 5/2 replaced and superseded Conclusion 4/14 for clarity.

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
CONCLUSION 5/3: USE OF ECCAIRS That, States that have not yet done so, be urged to use ECCAIRS for the reporting of accidents and serious incidents; and send their feedback to the ICAO MID Office by **15 October 2016**.	With respect to reporting of accidents and serious incidents, the RASG-MID/5 meeting underlined that ECCAIRS should be used for the reporting of accidents and serious incidents to ICAO.	State Letter Feedback	ICAO States	Jul.16 Oct.16	Closed SL ME 4–16/199 dated 01 August 2016
DECISION 5/4: FOURTH MID ANNUAL SAFETY REPORT That, the Fourth Edition of the MID Annual Safety Report (ASR) is endorsed and be published on the ICAO MID website.	The Reactive and Proactive Sections of the ASR are mature and providing excellent data and analysis. However, data collection for Predictive Section is still a challenge.	Fourth Edition of MID-ASR	RASG-MID	May 16	Completed Endorsed by the RASG-MID/5 meeting and posted on the ICAO MID website.

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
DECISION 5/5: ESTABLISHMENT OF AIA WG CORE TEAM That, the AIA WG Core Team composed of the following experts, is established to advance the work of the AIA WG between the face-to-face meetings: – Mr. Adnan Mohamed Malak from Saudi Arabia (Chairman); – Ms. Leena Ahmed Al Koohej from Bahrain; – Mr. Amr Mokhtar from Egypt; – Mr. Hassan Rezaeifar from Iran; – Dr. Abdallah Falah Suleiman Al-Samarat from Jordan; – Mr. Kamil Ahmed Mohamed from Sudan; – Ms. Rose Al Osta from IATA; – Capt. Fadi Khalil from IFALPA;and – Mr. Mashhor Alblowi from ICAO.	To fulfil the mandate assigned to the AIA WG	AIA WG Core Team	RASG-MID	May 16	Completed In order to fulfil the mandate assigned to the AIA WG (collection/reporting, validation and analysis of data), the RASG-MID/5 meeting agreed that a Core Team led by the Chairman of the AIA WG be established to advance the work of the AIA WG between the face-to-face meetings.
DECISION 5/6: iSTARS ADREP OCCURRENCE DATA FORM That, the AIA WG Core Team: a) further review and finalize the iSTARS ADREP Occurrence Data Form; b) develop guidelines for the use of the Form; c) establish a validation process of data provided; and d) develop standard and limited lists of main root causes and contributing factors to be included in the Form.	To support the creation of a platform for the sharing and analysis of safety information.	iSTARS ADREP Occurrence Data Form	AIA WG & ICAO	a) Jun. 16 b) Jun. 16 c) Sep. 16 d) Sep. 16	Closed Completed Completed Completed Completed

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
CONCLUSION 5/7: PROVISION OF SAFETY DATA USING iSTARS APPLICATION That, States be urged to allow their regulators and service providers (ANSPs, Aerodrome Operators, Airlines, etc.) to provide/share available data related to safety occurrences using the dedicated iSTARS application.	Difficulties facing some States and Stakeholders to share data related to accidents/incidents through iSTARS ADREP application, due to national policy.	State Letter	ICAO	Aug. 16	Closed SL ME 4 – 16/216 dated 16 August 2016
DECISION 5/8: RASG-MID SAFETY ADVISORY-PERIODIC SURVEILLANCE AUDIT OF AERODROME INFRASTRUCTURE AND MAINTENANCE That, the RASG-MID Safety Advisory at **Appendix 3E** is endorsed and be published by the ICAO MID Office.	To support Aerodrome Infrastructure and Maintenance Management.	RSA	RASG-MID	Jun. 16	Completed SL ME 4-16/232 dated 22 August 2016 - RASG-MID Safety Advisory-10 (RSA-10) has been posted on the ICAO MID website.

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
DECISION 5/9: AIRPLANE STATE AWARENESS (ASA)-LOW AIRSPEED ALERTING That, the RASG-MID Safety Advisory related to Airplane State Awareness (ASA)-Low Airspeed Alerting at **Appendix 3K** is endorsed and be published by the ICAO MID Office.	To mitigate the risk of LOC-I.	RSA	RASG-MID	Jun. 16	Completed SL ME 4-16/202 dated 01 August 2016 - RASG-MID Safety Advisory-09 (RSA-09) has been posted on the ICAO MID website.
DECISION 5/10: STANDARD OPERATING PROCEDURES EFFECTIVENESS AND ADHERENCE That, the RASG-MID Safety Advisory related to Standard Operating Procedures effectiveness and adherence at **Appendix 3L** is endorsed and be published by the ICAO MID Office.	To mitigate the risk of LOC-I.	RSA	RASG-MID	Jun. 16	Completed SL ME 4-16/200 dated 01 August 2016 - RASG-MID Safety Advisory-07 (RSA-07) has been posted on the ICAO MID website.
DECISION 5/11: AIRPLANE STATES AWARENESS (ASA) -TRAINING FLIGHT CREW TRAINING (APPROACH TO STALL & UPSET RECOVERY) VERIFICATION AND VALIDATION That, the RASG-MID Safety Advisory related to the Airplane States Awareness (ASA) -Training –Flight Crew Training (Approach to Stall & Up set recovery) Verification and Validation at **Appendix 3M** is endorsed and be published by the ICAO MID Office.	To mitigate the risk of LOC-I.	RSA	RASG-MID	Jun. 16	Completed SL ME 4-16/201 dated 01 August 2016 - RASG-MID Safety Advisory-08 (RSA-08) has been posted on the ICAO MID website.

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
DECISION 5/12: SST REVISED TERMS OF REFERENCE (TORS) That, the Terms of Reference of the SST be revised as at **Appendix 3O**.	To reflect the new way of doing business, with a focus on targeted assistance, sharing of expertise, experience and best practices in order to agree on recommended actions and provide assistance related to the implementation of the SEIs.	Revised TORs	RASG-MID	May 16	Completed
CONCLUSION 5/13: ACAC/ICAO AIG WORKSHOP That, a) a joint ACAC/ICAO AIG Workshop be organized in 2017; b) the Strategy for the establishment of a Middle East RAIO be finalized by the Workshop, for final endorsement by RASG-MID and the ACAC Executive Council; and c) States are encouraged to attend and support the Workshop.	To finalize the strategy for the establishment of a Middle East RAIO.	- Workshop - Revised Strategy for the establishment of a Middle East RAIO	ACAC/ICAO	Apr. 17 Aug. 17	Completed
DECISION 5/14: REVISED MID REGION SAFETY STRATEGY That, the revised version of the MID Region Safety Strategy (Revision 4, May 2016) at **Appendix 3R** is endorsed.	To include/remove Safety indicators based on the outcome of the HLSC 2015 and specific regional needs.	Revised version of the MID Region Safety Strategy	RASG-MID	May 16	Completed

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
DECISION 5/15: ENDORSEMENT OF RASG-MID PROCEDURAL HANDBOOK-THIRD EDITION That, the RASG-MID Procedural Handbook-Third Edition at **Appendix 4A** is endorsed.	- To ensure better continuity and support to RASG-MID. - Reference to the MID Region Safety Strategy and to the RASG-MID Engagement Strategy. - The agreed mechanism for coordination between MIDANPIRG and RASG-MID.	Handbook	ICAO	Jun. 16	Completed Handbook-Third Edition available on the ICAO MID website.
DECISION 5/16: RSC TERMS OF REFERENCE (TORs) That, a) the RSC is delegated the authority to approve on behalf of the RASG-MID: 1) the MID Annual Safety Reports; 2) the RASG-MID Safety Advisories; and 3) those Draft Conclusions/Decisions emanating from the subsidiary bodies, which necessitate urgent follow-up action(s). b) the RSC TORs should be updated to reflect the above.	To improve the efficiency of the RASG-MID and give enough authority to the RASG-MID Steering Committee (RSC) to advance the work.	Updated RSC TORs	RASG-MID	May 16	Completed The RSC could approve on behalf of the RASG-MID: - as deemed necessary: 1) the MID Annual Safety Reports; and 2) RASG-MID Safety Advisories. - those Draft Conclusions/ Decisions emanating from the subsidiary bodies, which necessitate urgent follow-up action(s).

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
CONCLUSION 5/17: REVISION OF THE RASGS TERMS OF REFERENCE That, ICAO consider the revision of the RASGs Terms of Reference (TORs) taking into consideration the latest developments including the outcomes of the HLSC 2015 and ICAO NCLB Initiative.	The need to update the RASGs TORs to keep pace with latest developments, including the recommendation of the HLSC-2015 and ICAO NCLB Initiative.	Revised RASGs TORs	ICAO HQ	TBD	Closed ICAO HQ to follow-up.
CONCLUSION 5/18: REMOTELY PILOTED AIRCRAFT SYSTEM (RPAS) OCCURRENCES That, States be urged to report any safety occurrence related to RPA operations to the ICAO MID Regional Office on regular basis, for review and analysis by the Accident and Incident Analysis Working Group (AIA WG).	RPAS is one of the Emerging Risks in the MID Region.	State Letter Feedback	ICAO States	Aug. 16 Nov. 16	Closed SL ME 4–16/215 dated 16 August 2016 - RPAS is one of the subjects being addressed by both MIDANPIRG and RASG-MID (with MIDANPIRG as the lead Group).

FOLLOW-UP ON RSC/5 CONCLUSIONS AND DECISIONS

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
RSC DECISION 5/1: FIFTH MID ANNUAL SAFETY REPORT That, the Final version of the Fifth Edition of the MID Annual Safety Report (ASR) be published on the ICAO MID website.	As required by the RASG-MID for the collection and analysis of the reactive, proactive and predictive safety data	Fifth Edition of MID-ASR	RASG-MID	Jan. 17	Completed Posted on the ICAO MID website.
RSC DECISION 5/2: RASG-MID SAFETY ADVISORY- SAFEGUARDING OF AERODROMES That, the RASG-MID Safety Advisory at **Appendix 3I** is endorsed and be published by the ICAO MID Office.	As part of the SEI related to safeguarding of aerodromes	State Letter	ICAO	Mar 17	Completed SL Ref: ME 4-17/066 dated 29 March 2017. Posted on the ICAO MID website.
RSC CONCLUSION 5/3: IMPLEMENTATION OF PANS-AERODROMES That, States that have not yet done so, be urged to: a) update their national regulations for implementation of the provisions of the PANS-Aerodromes; b) publish up to date lists of significant differences from this document in their AIP; and c) send feedback to the ICAO MID Office by **31 December 2017**.	Enhance aerodrome operations and runway safety through the implementation of PANS-Aerodromes provisions	Feedback	States	Dec. 17	Closed SL Ref: ME 4/1 – 17/230 dated 22 August 2017.

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
RSC DECISION 5/4: MID-SST REVISED SAFETY ENHANCEMENT INITIATIVES That, the MID-SST include in its work programme actions to support the implementation of the following SEIs: a) improve the status of implementation of State Safety Programme (SSP) and Safety Management System (SMS) in the MID Region; b) strengthening of States' Safety Oversight capabilities; c) improve Regional cooperation for the provision of Accident & Incident Investigation; and d) improve implementation of ELP requirements in the MID Region.	To reflect a revised set of SEIs.	Revised SEIs	RSC	Jan 2017	Completed
DRAFT CONCLUSION 5/1: SHARING OF SAFETY RECOMMENDATIONS That, a) States be urged to share their Safety Recommendations after investigation of accidents and incidents; and b) MID-SST to coordinate with AIA WG, ICAO and stakeholders the development of a RASG-MID Safety Advisory to consolidate a set of safety recommendations addressing the Focus Areas and Emerging Risks in the MID Region.	For analysis purposes and lessons learned, including proactive mitigation measures	State Letter	ICAO	Oct 2017	Endorsed RASG-MID Conclusion 6/4

CONCLUSIONS AND DECISIONS	CONCERNS/ CHALLENGES (RATIONALE)	DELIVERABLE/ TO BE INITIATED BY		TARGET DATE	STATUS/REMARKS
DRAFT CONCLUSION 5/2: ADOPTION OF ISAGO AND IGOM FOR GROUND HANDLING OPERATIONS That, MID States be invited to: b) encourage airlines and aerodrome operators to implement the procedures contained in the IATA Ground Operations Manual (IGOM) for harmonization purpose and to improve safety of Ground Handling Operations; and c) use the IATA Safety Audit for Ground Operations (ISAGO) as a source of safety data which provide complementary information for the safety oversight activities of ground handling operations services.	To improve safety of Ground Handling Operations	State Letter	ICAO	Oct 2017	Endorsed RASG-MID Conclusion 6/5
DRAFT CONCLUSION 5/3: DEVELOPMENT OF ADDITIONAL GROUND HANDLING OPERATIONS PROVISIONS That, ICAO be invited to consider the development of additional Ground Handling Operations provisions.	Need for additional guidance to improve safety of Ground Handling Operations	ICAO provisions	ICAO	TBD	Endorsed RASG-MID Conclusion 6/6
DRAFT CONCLUSION 5/4: EXPANSION OF THE RSP SCOPE That, ICAO be invited to consider the expansion of the ICAO Runway Safety Programme (RSP) scope from the runway strip to the movement area (including aprons).	Need to extend the RSP scope to include the movement area		ICAO	TBD	Endorsed RASG-MID Conclusion 6/7

APPENDIX 3B

LOC-I DIPs Status

DIP	Description	Output	Deadline	Status	Comments
LOC-I/1	Airplane State awareness (ASA)-Low airspeed alerting	1. Consulted with airframe manufacturers on status of mod on aircraft. 2. Track implementation	29 Sept.2016	1 & 2 Completed On going	1.Safety advisory RSA 09 issued
LOC-I/2	Standard Operating Procedures effectiveness and adherence	1. Ensure Air Carriers SOPs updated. 2. Assessments by air carriers to determine level of adherence current SOP	31 Jan. 2016 31 March 2017	Completed On going	safety advisory RSA 07 issued
LOC-I/3	ASA-Training-Flight Crew Training Verification and Validation	1. IATA to organize a seminar to promote and roll-out LOC-I programme 2. Air carrier standard operating procedures (SOP) reviewed, and updated as needed, 3. Track implementation	30 June 2016 31 July 2018	Completed Completed On going	1. LOC-I Seminar organized 3 March 2016 in Dubai 2. Safety advisory RSA 08 issued 3. Provided advanced maneuvers manual to MENA air operators

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APPENDIX 3C

CIFT DIP Status

DIP	Description	Output	Deadline	Status	Comments
CIFIT/1	The implementation of BPN Approach procedures to all runways not currently served by precision approach procedures	1. Identify and prioritize the airports/runways which require specific PBN approaches. 2. Concerned States, CANSO, IATA and ICAO to establish a Work Force to develop an appropriate detailed action plan for the implementation of PBN approaches at the identified airports/runways. 3. implementation of PBN approach procedures at the identified airports /runways in accordance with their associated action plans.	Long Term	1.Completed 2.on going 3. on going	**Runway priorities** 1 OMRK 16/34 (Completed) 2.OIMM 13 (in progress) 3.OISS 11 /29 (in progress) 4.HEBA 14 5.ORMM 14/32 (in progress) 6.ORNI 10 (Completed)

APPENDIX 3D

DIP Tracking for MID-RAST/RGS/2

Development guidance material and training programmes to support the creation of action plans by local aerodrome Runway Safety Teams (RST)

RGS/2 DIP Deliverable	Target Date	Status	Comments
✓ Develop and issue Stop Bar guidance documentation for consideration of LRSTs	End April 2014	Completed	RASG-MID Safety Advisory (RSA-01) circulated to States on 2 November 2014 (Ref: ME 4-14/253).
✓ Organise a Workshop for Regional RST Go-Teams	End June 2014	Completed	3 June 2014 – see *RASG-MID/4 WP/7 - Outcome of MID-RRSS/2* for details.
✓ Develop and issue regulatory framework supporting establishment of LRSTs	End September 2014	Completed	RASG-MID Safety Advisory (RSA-02) circulated to States on 20 January 2015 (Ref: ME 4-15/014).
✓ Develop and issue a model checklist for LRSTs	End December 2014	Completed	RASG-MID Safety Advisory (RSA-03) circulated to States on 16 March 2015 (Ref: ME 4-15/078).

APPENDIX 3E

DIP Tracking for MID-RAST/RGS/3

Development guidance material and training programmes to support Aerodrome Infrastructure and Maintenance Management

RGS/3 DIP Deliverable	Target Date	Status	Comments
✓ Conduct a MID-Regional Runway Safety Seminar	End June 2014	Completed	4 June 2014 – see *RASG-MID/4 WP/7 - Outcome of MID-RRSS/2* for details.
✓ Organise a Regional Aerodrome Certification Workshop	End June 2014	Completed	4 June 2014 - see *RASG-MID/4 WP/7 - Outcome of MID-RRSS/2* and *RASG-MID/4 WP/8 - Runway Safety Related Issues.*
✓ Develop a MID-Region Aerodrome Certification toolkit for States.	End March 2015	Completed	RASG-MID Safety Advisory (RSA-05) circulated to States on 10 September 2015 (Ref: ME 4-15/261).
✓ Develop and issue guidance material on periodic surveillance audits of Aerodrome Infrastructure and Maintenance	End March 2016	Completed	RASG-MID Safety Advisory (RSA-10) circulated to States on 22 August 2016 (Ref: ME 4-16/232).
Develop and issue guidance material on proactive oversight of Aerodrome Infrastructure Development	End November 2017	In Progress	Draft to be presented at RGS WG/4 (Cairo, Egypt, 5-7 November 2017).

APPENDIX 3F

DIP Tracking for MID-RAST/RGS/4

Aerodrome Safeguarding

RGS/4 DIP Deliverable	Target Date	Status	Comments
Safeguarding Guidance Toolkit	April 2016	Completed	RASG-MID Safety Advisory (RSA-11), Safeguarding of Aerodromes, was circulated to States on 29 March 2017 (Ref: ME 4-17/066).
Regional Workshop	December 2017	In-Progress	The Workshop will be hosted by Egypt in Cairo from 4-6 December 2017 with speakers provided by Egypt and UAE. The Workshop is confirmed as part of the ICAO MID Regional Office - Tentative Schedule of Meetings, Seminars and Workshops.

APPENDIX 3G

DIP Tracking for MID-RAST/RGS/6

Laser Attacks

RGS/6 DIP Deliverable	Target Date	Status	Comments
RSA for Guidance Material	September 2016	Completed	Draft RASG-MID Safety Advisory (RSA-12) was reviewed by RGS WG/3 and was circulated to States on 29 March 2017 (Ref: ME 4-17/067).
Amended RSA-12	September 2017	Completed	Draft Amended RSA-12 has been prepared and is included as part of RASG-MID6 - WP/11 pending endorsement for publication
✓ ICAO to issue State Letter to promulgate regulations on Laser Attacks	June 2015	Completed	Letter issued by ICAO MID on 3 September 2015.
RSA with Case Studies	May 2017	In Progress	Draft has being prepared to be reviewed by RGS/4 Meeting by November 2017 before circulation to States

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APPENDIX 3H

DIP Tracking for MID-RAST/RGS/5

Wildlife Management Control

RGS/5 DIP Deliverable	Target Date	Status	Comments
RSA for Regulatory Framework & Guidance Materials	August 2016	Completed	Draft RASG-MID Safety Advisory (RSA-13), *Wildlife Management Regulatory Framework & Guidance Materials,* is included as part of RASGMID-6 - WP/11 pending endorsement for publication.
Templates on WHMP	End November 2017	In Progress	The templates have been drafted and will be presented to RGS WG/4 (Cairo, Egypt, 5-7 November 2017).
Wildlife Management Control Workshop	September 2018	In Progress	Sudan has offered to host the Workshop in Khartoum in September 2018.

APPENDIX 3I

RASG-MID SAFETY ADVISORY – 13 (RSA-13)

September 2017

MID-Region

Wildlife Management and Control Regulatory Framework & Guidance Material

Date of Issue:	September 2017
Revision No:	First Edition
Document Ref. No.:	RASG-MID/MIDRAST/RGS/SEI/05

Owner:	RASG-MID

These guidelines are developed by the Runway and Ground Safety Working Group (RGS WG), as part of MID-RAST/RGS/4 DIP deliverables, based on the work of the Sudanese Civil Aviation Authority, the United Arab Emirates Civil Aviation Authority and the Egyptian Civil Aviation Authority in collaboration with the ICAO MID Regional Office within the framework of the Regional Aviation Safety Group - Middle East (RASG-MID).

Disclaimer

This document has been compiled by members of the aviation industry to provide guidance for civil aviation regulators, aerodrome operators and other stakeholders in order to enhance aviation safety. It is not intended to supersede or replace existing materials produced by the States national regulators or in ICAO SARPs. The publication of this document does not prejudice the National Regulator's ability to enforce existing national regulations. To the extent of any inconsistency between this document and the National/International regulations, standards, recommendations or advisory publications, the content of the National/International regulations, standards, recommendations and advisory publications shall prevail.

Regional Safety Advisory

TABLE OF CONTENTS

INTRODUCTION

BACKGROUND

Wildlife Management and Control had been identified by the MID Region Annual Safety Report Team (ASRT) as part of one of three main risk areas (Focus Areas) to be addressed under the MID Region Aviation Safety Group (RASG-MID) framework.

The MID-RAST RGS has undertaken a Safety Enhancement Initiative (SEI) to develop guidance material and training programs to support creation of action plans for Wild Life Management and Control. The Detailed Implementation Plan (DIP) for the SEI included the action to develop and issue regulatory framework supporting establishment of Wild Life Management and Control Teams.

PURPOSE

The purpose of this circular seeks to propose a regulatory framework to support the creation and success of local Wild Life Management and Control entity consisting of the following elements:

(Chapter 1)

Model Regulation including articles related to Wildlife Management and Control that clarify main responsibilities of Civil Aviation Authority (CAA) and Aerodrome Operator and their relation with other national entities regarding wildlife management and control roles and enforcement.

(Chapter 2)

Guidance Material provides detailed instructions on the implementation of the requirements contained in the State's National Civil Aviation Regulations regarding the control of wildlife in the vicinity of an aerodrome. It sets the regulatory framework applicable in each State for wildlife hazard assessment, the recording and reporting of wildlife strikes to aircraft as required by ICAO. These materials should be considered in conjunction with the ICAO PANS Aerodrome. This chapter includes requirements for the evaluation of the wildlife hazard by airport operators as well as the development and implementation of wildlife control measures to minimize the likelihood of collisions between wildlife and aircraft.

(Chapter 3)

Model Guidance for Development of Wildlife Hazard Management Programs at Airports provides guidance to evaluate the Ecological Study (Wildlife Hazard Assessment) and Wildlife Hazard Management Plan (WHMP) submitted by Aerodrome Operators. These materials are developed by the Aerodrome Operator and may be evaluated as part of Aerodrome Certification, during periodic surveillance audits or during the change management process. The evaluation may be conducted by the Aerodrome Operator or the CAA depending on the responsibilities as established by the State.

USING THIS CIRCULAR

The Table of Contents provides key points of the regulatory framework supporting the creation of Wildlife Management and Control Teams.

The reader will choose the depth at which the circular will be used at any given time. Reading may range from using the Table of Contents or elements of the model regulation as a benchmark for gap analysis – to adopting and/or adapting the content of the proposed model regulation and guidance/oversight materials as part of a national regulatory framework.

CHAPTER 1

MODEL REGULATION IN SUPPORT OF AERODROME WILDLIFE MANAGEMENT & CONTROL

1.1 Application

Each State should publish applicable National Civil Aviation Regulation which includes requirements for Wildlife Management at and in the vicinity of aerodromes. The following paragraphs contain articles, in support of this objective, which should be assessed by each CAA

1.2 Preface to Model Regulation

The following provides a model order summarising the links between the National Civil Aviation Law, the Civil Aviation Authority (CAA), National Civil Aviation Regulation and the Aerodrome Manual by way of example. The specifics of these relationships will vary from State to States however the obligations of the CAA and Aerodrome Operator should always be clear.

Model Order entitled Wildlife Control (example)

- The National Civil Aviation Law gives the CAA the powers to set aerodromes standards.
- The aerodromes standards have been further specified in National Civil Aviation Regulation and include the requirements for wildlife strike hazard reduction in the vicinity of aerodromes.
- National Civil Aviation Regulation requires an Aerodrome Operator to evaluate the wildlife hazard in the vicinity of the aerodrome and adopt measures to minimize the likelihood of collisions between wildlife and aircraft.
- National Civil Aviation Regulation requires the development and implementation of a procedure for recording and reporting wildlife strikes to aircraft as well as wildlife hazard assessment and control measures which are included in the Aerodrome Manual.

1.3 Model Regulation

1.3.1 Wildlife Strike Hazard Reduction

1.3.1.1 The wildlife strike hazard on, or in the vicinity of, an aerodrome should be assessed through:

a) the procedure for recording and reporting wildlife strikes to aircraft prescribed;

b) the collection of information from aircraft operators, airport personnel, and other sources, on the presence of wildlife on or around the aerodrome constituting a potential hazard to aircraft operations; and

c) an ongoing evaluation of the wildlife hazard by the airport operators.

1.3.1.2 The wildlife hazard assessment should be documented in the Aerodrome Manual.

1.3.1.3 The aerodrome operator should forward wildlife strike reports to the CAA for onward transmission to the ICAO Bird Strike Information System (IBIS) database.

1.3.1.4 Action should be taken to decrease the risk to aircraft operations by adopting measures to minimize the likelihood of collisions between wildlife and aircraft. The wildlife control measures should be documented in the Aerodrome Manual.

1.3.1.5 Action by the CAA Authority and Aerodrome Operator is required to eliminate or to prevent the establishment of garbage disposal dumps or any other source which may attract wildlife to the aerodrome, or its vicinity, unless an appropriate wildlife assessment indicates that they are unlikely to create conditions conducive to a wildlife hazard problem. Where the elimination of existing sites is not possible, the authority shall ensure that any risk to aircraft posed by these sites is assessed and reduced to as low as reasonably practicable.

1.3.1.6 A due consideration should be given by the State to aviation safety concerns related to land developments in the vicinity of the aerodrome that may attract wildlife.

1.3.2 Roles & Responsibilities

1.3.2.1 **Civil Aviation Authority (CAA)**

1.3.2.1.1 The CAA is responsible for the development and issuance of the regulatory and guidance material applicable to aerodromes design and operations.

1.3.2.1.2 The CAA evaluates the Aerodrome Manual submitted by an Aerodrome Operator including the wildlife hazard assessment and the wildlife control measures to determine whether it complies with National Regulation and indicate whether the applicant will be able to operate and maintain the aerodrome properly.

1.3.2.1.3 The CAA collects, through its reporting systems, information from aircraft operators, airport personnel, and other sources, on the presence of wildlife on or around the aerodrome constituting a potential hazard to aircraft operations.

1.3.2.1.4 The CAA adopts the mutual coordination and communication among aerodrome operator and any other state departments regarding land-use planning and development In the vicinity of aerodrome as long as this development affects the likelihood of wildlife existence.

1.3.2.1.5 Finally, the CAA submits Wildlife Strike Reports to the ICAO Bird Strike Information System (IBIS) database.

1.3.2.2 **Aerodrome Operator**

1.3.2.2.1 The Aerodrome Operator is responsible for the conduct of a wildlife hazard assessment in the vicinity of the airport.

1.3.2.2.2 The Aerodrome Operator is also required to include in the aerodrome manual, the wildlife hazard assessment and the measures adopted to control the identified hazards and minimize the likelihood of collisions between wildlife and aircraft.

1.3.2.2.3 The Aerodrome Operator, in cooperation with CAA, approaches and communicates with the different state-related departments in the aerodrome vicinity to be notified with any development or land-use planning which may affect the likelihood of wildlife existence. In order that the aerodrome operator may evaluate the expected impact behind that development or land-use planning.

1.3.3 Wildlife Hazard Assessment

1.3.3.1 **Initial Assessment:** An Aerodrome Operator must conduct for each aerodrome an initial assessment of the existence and level of hazard posed or likely to be posed by wildlife in the vicinity of the aerodrome.

1.3.3.2 The initial Wildlife Hazard Assessment must be conducted by wildlife specialists, with proven knowledge of the types and behaviours of the wildlife specifies present or likely to be present in the area where the aerodrome is located.

1.3.3.3 The initial Wildlife Hazard Assessment should:

a) identify the wildlife species that have access to the airport, in accordance with 1.3.3.5 cross;
b) describe the features that may attract wildlife, in accordance with 1.3.3.6;
c) assess the wildlife hazards or potential hazards to aircraft operating to or from the aerodrome, in terms of:
    i. the likelihood of occurrence of a wildlife strike; and
    ii. its impact on the flight; and
d) recommend actions for reducing identified wildlife hazards to aircraft operating to or from the aerodrome, using one or more of the control measures prescribed in Chapter 3.

1.3.3.4 The methodology used for the identification of wildlife species must be documented in a standardized procedure. As a minimum, it should include the number and location of the survey points established, the duration of the observation, and how the selected duration allows for adequate assessment of the wildlife species and seasonal patterns.

1.3.3.5 For each type of wildlife species, the following information must be provided:

a) methodology used for observation;
b) its scientific and local name;
c) estimated numbers and locations; and
d) local movements, daily and seasonal occurrences.

1.3.3.6 Potential wildlife attractants may include:

a) waste disposal;
b) water management facilities;
c) wetlands;
d) confined disposal facilities;
e) Agricultural activities (livestock, aquaculture, farming ...etc.);
f) Landscaping; or
g) any other specific land-use activities that may attract wildlife.

1.3.3.7 The description of the potential wildlife attractants should include:

a) name;
b) distance from the aerodrome reference point;
c) direction from nearest approach / take-off path;
d) dimensions;
e) type of activities;
f) seasonality (if applicable); and

g) wildlife species that may be attracted to it.

1.3.3.8 The wildlife hazards or potential hazards can be categorized on the basis of their probability and severity.

1.3.3.9 An example of classification of the hazards is given in appendix c, table's appendix c -1 to appendix c-3 indicating the probability of occurrence, its severity if it occurs and the combination of probability/severity.

1.3.3.10 A colour coding may be used to indicate what is intolerable (Red – unacceptable under the existing circumstances), tolerable (Yellow – acceptable based on mitigation measures to control wildlife) or acceptable (Green – acceptable).

1.3.3.11 **Continuous Assessment:** The Aerodrome Operator should establish a procedure for continuous assessment of the wildlife hazard.

1.3.3.12 **Periodicity:** The Wildlife Hazard Assessment should be reviewed :

a) at least once a year; or
b) after a wildlife occurrence.

1.3.3.13 **Nature and Level of the Hazards:** The review of the wildlife hazard assessment should identify any changes in:

a) wildlife species;
b) the features that may attract wildlife on, or in the vicinity of the aerodrome; or
c) the assessment of the wildlife hazards or potential hazards to aircraft operating to or from the aerodrome.

1.3.3.14 **Effectiveness of the Control Measures:** The review of the wildlife hazard assessment should identify:

a) new wildlife control measures that may be required of address newly identified hazards; and
b) existing wildlife control measures that may need to be reinforced, and/or wildlife control measures to be discontinued because they are no longer required or are ineffective.

1.3.4 Wildlife Control

1.3.4.1 **General:** The aerodrome operator should demonstrate that the proposed wildlife control measures are adequate to reduce the risk posed by wildlife to aircraft operating to or from the aerodrome as identified in the wildlife hazard assessment or its subsequent review. Examples of wildlife control measures are provided in 1.3.4.2 to 1.3.4.6.

1.3.4.2 **Description of the Control Measures:** The description of the selected control measures should include:

a) type of control measures selected;
b) wildlife species;
c) potential wildlife attractants;
d) actions to be implemented;
e) periodicity, or season(s) where applicable;
f) equipment to be used, where applicable; and
g) personnel involved and the training requirements where applicable.

1.3.4.3 **Habitat Modification and Exclusion:** Habitat modification means changing the environment to make it less attractive or inaccessible to the problem wildlife identified during the wildlife hazard assessment. It can be achieved through the reduction, elimination, or exclusion of one or more of the elements that attract wildlife such as:

a) Food;
b) Water; or
c) shelter.

1.3.4.4 **Wildlife Removal:** if legally allowed for the species being considered , wildlife removal may include:

a) Capturing;
b) destroying eggs and nests;
c) shooting;
d) oral or contact toxicants;
e) fumigants; or
f) lethal traps.

1.3.4.5 **Repellent and Harassment Techniques:** Repellent and harassment techniques may be used to keep hazardous wildlife away from specific areas on or near an airport by affecting the animal's senses through chemical, auditory or visual means. Repellent and harassment techniques may include:

a) patrols of airside areas to disperse birds and other hazardous wildlife;
b) chemical repellents legally allowed for use in Sudan by the relevant national authorities;
c) audio repellents appropriate to the type of bird or mammal; or
d) visual repellents appropriate to the type of bird or mammal.

1.3.4.6 **Aircraft Schedule Modification:** The flight schedules of some aircraft may be adjusted to minimize the chance of a strike with a wildlife species that has a predictable pattern of movement.

1.3.5 Recording and Reporting Wildlife Strikes

1.3.5.1 **Recording:** Aerodrome Operators should maintain a log of wildlife strikes containing the date, types and numbers of birds or animals, and aircraft involved. The procedure for recording the wildlife strikes must be documented in the Aerodrome Manual.

1.3.5.2 **Reporting:** A Wildlife Strike Reporting Form is made available to aircraft operators, airport personnel and air traffic controllers to report wildlife strikes.

1.3.5.3 **Submission of Wildlife Strike reports to ICAO:** CAA should have wild life strike data base and mechanism to ensure that all strike reports are consistent, error-free data before entering a single, consolidated report into the database. Time interval for update and review the stored date should be implemented (may be every six weeks); the CAA should send a current version of the database to the International Civil Aviation Organization (ICAO) for incorporation into ICAO's Bird Strike Information System (IBIS) Database.

*Note: **Appendix F** provides a guide for the bird strike reporting form, for further information can be found: ICAO airport service manual, part 3, item 3.5 Figure 3-1. and 3-2.*

CHAPTER 2

MODEL PROCESS FOR ASSESSMENT OF WILDLIFE HAZARD MANAGEMENT

2.1 Purpose

To provide guidance to personnel appointed to evaluate of Ecological Study (Wildlife Hazard Assessment) and Wildlife Hazard Management Plan (WHMP) submitted by Aerodrome Operators. These materials are developed by the Aerodrome Operator and may be evaluated as part of Aerodrome Certification, during periodic surveillance audits or during the change management process. The evaluation may be conducted by the Aerodrome Operator or the CAA depending on the responsibilities as established by the State.

The model process below is based on requirement for the Aerodrome Operator to submit the Ecological Study (Wildlife Hazard Assessment) and WHMP directly to the CAA for evaluation and acceptance.

2.2 Applicability

This model Operating Procedure is applicable to the assessment of Ecological Study (Wildlife Hazard Assessment) and WHMP.

2.3 Regulatory System

a. Civil Aviation Law […..]
b. [Caa Regulation]
c. [Advisory Circular]
d. [Inspector Handbook/ …]
e. […]

2.4 Responsibilities

a. The Ecological Study (Wildlife Hazard Assessment) may be evaluated by specialist (third party contract / competent inspectors).
b. The WHMP shall be evaluated by the [xxxx] appointed by [xxxx].
c. The Team Leader is responsible for conducting and reporting the evaluation process.
d. The WHMP are approved by the [xxxxx].

2.5 Procedure

2.5.1 Introduction

It is required that aerodromes exposed to wildlife hazards analyse the level of risk posed by the existing hazards to enable a determination of the need for a WHMP. It is not anticipated that such a determination can always be reached before the commencement of initial operations at the aerodrome. Data collection on wildlife activity in the vicinity of the aerodrome and subsequent analysis may take some time after aerodrome operations begin before meaningful conclusions can be drawn concerning the Wildlife Management Program to be implemented, where applicable. However, it is anticipated that a procedure for monitoring bird activity and of recording and reporting bird strike be established and incorporated in the Aerodrome Manual before approval of the Manual by the CAA.

2.5.2 Application of Ecological Study

Aerodrome Operators are required to submit all the documents needed to demonstrate the level of risk posed by the existing hazards to enable a determination of the need for a WHMP.

The application should be accompanied by the following documentation at least:

1. Hazard Analysis of the event which prompted the study.
2. Identification of the species, numbers, locations, local movements, and daily and seasonal occurrences of wildlife observed.
3. Identification and location of features on and near the airport that attract wildlife.
4. Description of the wildlife hazard to air carrier operations.
5. Form provided in Attachment 1, signed by the Accountable Manager and by the Safety Manager,
6. Any other document deemed useful by the aerodrome operator or requested by CAA.

2.5.3 Approval/Acceptance of Ecological Study

Step 1: Upon receipt of an application, the [assign Team] should conduct a preliminary check in order to establish if it is compliant with the relevant provisions of Regulation - and if all the documents have been submitted.

Step2: After the preliminary check, the [Team] should evaluate the content of the submitted application, in order to establish if the proposed study can be accepted, taking into account the potential impact of the wildlife hazard on aircraft operation.

Step3: [DASS] (or equivalent directorate) should communicate in writing to the concerned Operator the - positive or negative - result of evaluation or the request for further explanations, within the applicable timeframe (ref. [Law…]).

Step 4: Once accepted [DASS] (or equivalent directorate) request from the concerned Operator to submitted the Wildlife Hazard Management Plan.

2.5.4 Approval of Wildlife Hazard Management Plan (WHMP)

Step 1: Upon receipt of an application, the [assigned Team] should conduct a preliminary check in order to establish if it is compliant with the relevant provisions of the National Civil Aviation Regulation.

Step 2:

- After the preliminary check, the [assigned Team] should evaluate the content of the submitted application, in order to establish if the proposed procedure and hazard mitigation can be accepted.

- The assessment can be obtained by using different methods, use form no. 1 (the aim is to demonstrate that the proposed solution ensures the safety of the aircraft operation). By ensuring the following:
    1) Its effectiveness in dealing with the wildlife hazard.
    2) Indications that the existence of the wildlife hazard, described in the ecological survey, should be re-evaluated.
    3) Procedures outlined in the Plan, such as inspections prior to air carrier operations, are carried out.
    4) The reporting system are clear and applicable related to size of the aerodrome and the traffic density

5) Procedure to deal with the habitat modification projects or changes in land us identified in the Plan
6) Procedures are established by the Aerodrome Operator for the conduct of a wild life risk assessment
7) Implementation Plan (timeline) be prioritized and respect the mitigation measure

For the purposes of the assessment* - in addition to examining the submitted documents - [CAA] may require to conduct audits or inspections as well as to participate in demonstrations or tests carried out by the operator, as deemed appropriate.

**may use (form 1) and (Model Aerodrome Pre-Audit Assessment Form appendix D RASG-MID SAFETY ADVISORY – 05 (MID-Region Aerodromes Certification Toolkit)*

Step 3: The [assigned Team] should verify if the Aerodrome Operator has reported the related information in the appropriate sections of the Aerodrome Manual and has arranged with the AIS Provider for publishing the relevant data on the AIP (if it needs to demonstrate the hazard to air carrier).

2.6 Records

In order to comply with National Civil Aviation Regulation the [Team Leader] is responsible for ensuring that all the relevant documents relating to wildlife management plan (as listed in the preceding paragraphs) are properly maintained in the [Aerodrome File], providing for adequate storage, accessibility, traceability of data.

The above mentioned documents are maintained in the Aerodrome file for the lifespan of the Certificate.

2.7 Forms

Appendix A - Wildlife Hazard Management Assessment Checklist

CHAPTER 3

MODEL GUIDANCE FOR DEVELOPMENT OF WILDLIFE HAZARD MANAGEMENT PROGRAMS AT AIRPORTS

3.1 Introduction

The extent of a wildlife hazard at particular airport locations is widely variable. Many solutions are available but none are likely to be useful at any one airport, the most important action, upon which any risk management strategy must be founded, is knowing the nature of the hazard; this may vary by time of day and seasonally and must be related to the likely pattern of aircraft movements. For that Aerodrome Operators are required to establish all the documents needed to demonstrate the level of risk posed by the existing hazards of the wildlife hazard to enable them to establish the effective criteria for mitigate the hazard of the wildlife

3.1.1 Phase I: Wildlife Hazard Assessment /Ecological Study

Starting with a Wildlife Hazard Assessment Study is highly recommended which is starting with collecting data (information, records, etc…) (INPUTS), then analyses all these data to identify the hazard which will affect to aircraft operation.

Step 1: Data Collection

1. All the previous events and bird strikes records and statistics.
2. Analysis of the event which prompted the study.
3. All the records of damaging collisions with wildlife other than birds.
4. Observed wildlife species.
5. Observed wildlife numbers and sizes.
6. Observed wildlife locations and local movements.
7. Observed wildlife daily and seasonal occurrences.
8. Identification and location of wildlife attractants on and near the airport.

*Note: An Airport Operator may use the form in **Appendix B - Data Collection Template for Observed Wildlife** to describe the observed wildlife related to the number, location and wildlife movement period - Otherwise an Airport Operator may establish maps including details about habitats, major topographical features, wildlife movements, etc. (Highlighting the wildlife that are pertinent to the objectives) / Maps over the course of several seasons so as to account for changes in wildlife and habitat. List in details the resources, habitats, and wildlife present on your land. Include details about size of species, movements of animals, seasonal change, etc…*

Step 2: Data Analysis
Analysis all collected data of the wildlife hazard to air carrier operations.

Step 3-4: Document Preparation: The study describe in above paragraph should be introduced to CAA to determine whether or not there is a need for a Wildlife Hazard Management Plan (WHMP) taking into consideration some important parameters refer to (Chapter 2 in this manual)

3.1.2 Phase II: Establish Wildlife Hazard Management Plan (WHMP)

The goal of this Wildlife Hazard Management Plan (WHMP) is to promote aviation safety for passengers and flight crews by reducing wildlife hazards and associated risks to aircraft and airport operations caused by wildlife activities on and in the airport vicinity. A wildlife management plan is a document used by airport operator to outline and implement steps for preserving, altering, or exploiting wildlife on /off airport, a management plan usually contains maps, descriptive documents.

The WHMP should be establish based on the ecological study (Wildlife Hazard Assessment) and should contain at least the following:

1. Foreword
2. Glossary
3. Definitions
4. Objective
5. Duties & Responsibilities
6. Wildlife Hazard identification and Assessment
   (a) All the previous events and bird strikes records and statistics.
      i. The most significant wildlife hazard that induces events.
      ii. The most potential time and date of events occurrences.
   (b) All the records of damaging collisions with wildlife other than birds.
   (c) Observed wildlife species.
      i. Basic information about the wildlife at the airport region.
      ii. The airport region relevant biodiversity.
      iii. The most significant wildlife species behaviour.
      iv. The main reasons for such wildlife species existence or flying over.
      v. Migratory flyway (If it is migratory bird species).
      vi. Flyway altitude.
      vii. Determination of the altitudes and geographical sites of interference between aircrafts pathway and the migratory birds' flyway.
   (d) Observed wildlife numbers and sizes.
   (e) Observed wildlife locations and local movements.
      i. The most significant bird flocks gathering points and geographical distribution at the airport region (on or within the airport vicinity).
      ii. The local movement of bird flocks determination.
   (f) Observed wildlife daily and seasonal occurrences.
   (g) Identification and location of wildlife attractants on/in the vicinity of aerodromes.

On Airport	**Airport Vicinity**
i. Solid waste transfer stations	i. Landfills
ii. Water treatment facilities	ii. Waste water oxidation ponds
iii. Maintenance hangers	iii. Forestry
iv. Landscapes	iv. Agricultural activities
v. Recycling stations	v. Landscapes
vi. Wetlands	vi. Golf courses
vii. Agricultural activities	
viii. Others	

7. Description of the wildlife hazard to air carrier operations
8. Wildlife Control
   (h) Monitoring
      i. Daily Wildlife Management Log
      ii. Monthly Summary
9. Establishment of Performance Indicators and Self-Assessment
10. Recording and Reporting Wildlife Strikes.

3.2 WHMP Implementation Phases

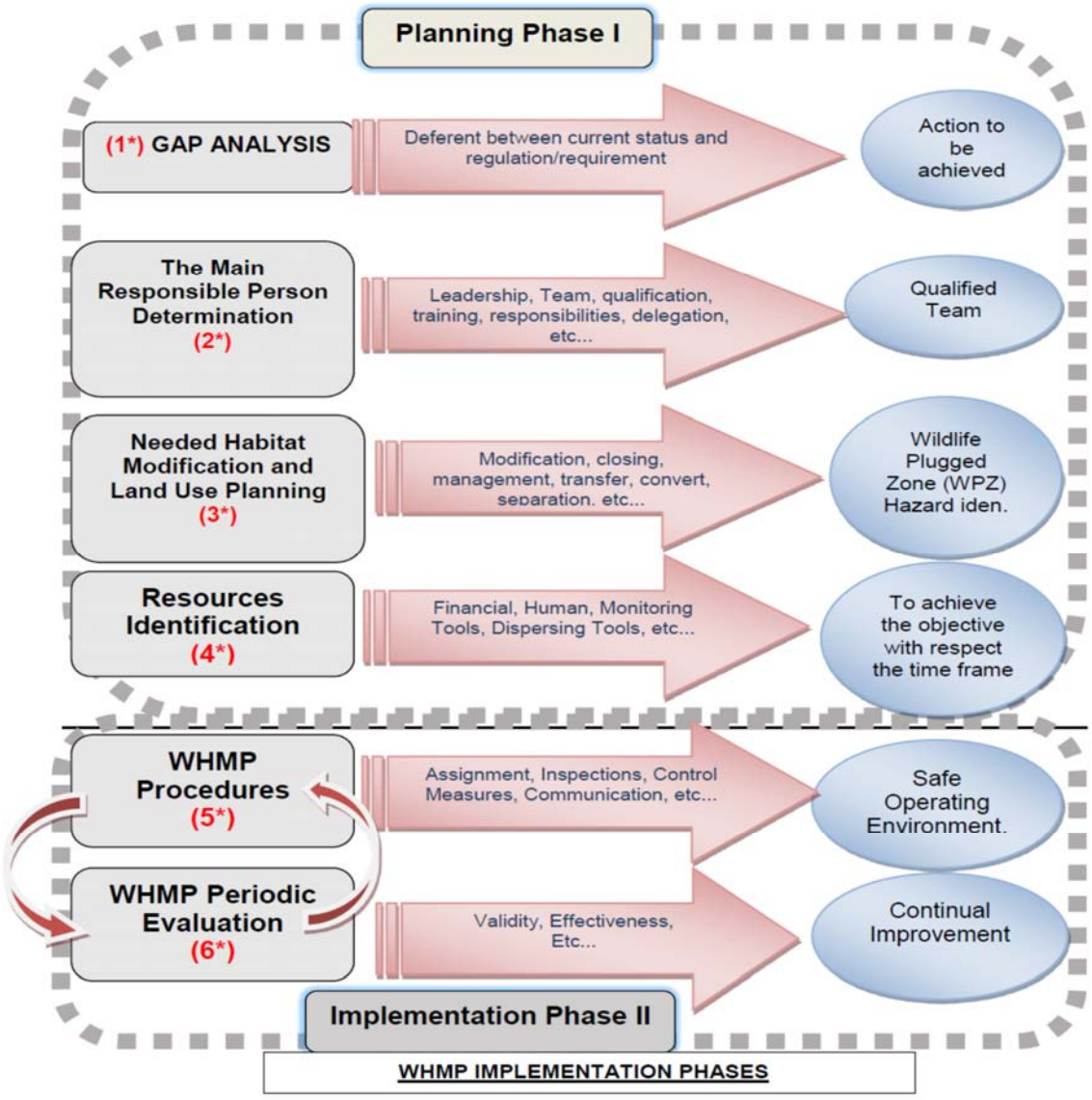
3.2.1 **The purpose** of this Section is to establish criteria for implement the WHMP by the following components:

1. Phase I : Planning Phase
   (a) Conduct Gap Analyses
   (b) Resource Allocation

(c) Responsibility Identification
(d) Hazard Identification

2. Phase II : implementation phase
   (a) WHMP Implementation Procedures
   (b) Periodic Evaluating

Note: see Figure 1 – *WHMP implementation phases*



Process #	Task Title	Process	Deliverable
Phase I: Planning Phase			
1*	Gap Analysis	Current situation vs objectives	Requirements needed to be fulfilled
2*	Resource Identification	Human, financial, tools, etc…	Allocated all needed resource for Suitable work environment

3*	Responsible Person Determination	Team assignment and training	Qualified team
4*	Habitat Modification	Management, closing, transfer, etc…	Passively created considerable safe operating environment
Phase II: Implementation Phase			
5*	WHMP Implementation Procedures	Inspection, wildlife dispersing, recording, analysis, etc…	Actively created considerable safe operating environment
6*	Periodic Evaluating	WHMP Validity and effectiveness verification	Verified and audited plan which includes continual improvement

Figure -1 WHMP implementation phases

3.2.2 Phase I: Planning Phase

Step 1*: Gap Analysis (Where Are You? And What Should You Be?
A gap analysis is a method of assessing the differences in performance between a current situation (present state) and standard situation (the target state) to determine whether requirements are being met and, if not, what steps should be taken to ensure they are met successfully. Gap refers to the space between "where we are" (the present state) and "where we want to be".

The first step in conducting a gap analysis is to establish specific target objectives by looking at the strategic goals and improvement objectives which are stated in WHMP.

The next step is to analyze current state processes by collecting relevant data on performance levels and how resources are presently allocated to these processes. This data can be collected from a variety of sources depending on what's being analysed, such as by looking at documentation and observing current activities. Lastly, after an airport compares its target goals against its current state, it can then draw up a comprehensive implementation plan to fulfil the gap between its current and future states, and reach its objectives level

Note:
C - Risk Analysis *may be used to conduct gap analysis*

Step 2*: Resources Allocation:
Airport Operator responsible for allocate the resources to implement the appropriate wildlife hazard management techniques these resource is define as:

Human Resources Identification: assign key person from the following department (the Wildlife Hazards Control Team) and other contributing airport personnel for implementing each phase of the plan

a. Environmental Department
b. Safety Department
c. Operations Department
d. Maintenance Department
e. Security Department
f. Air Traffic Control (ATC)
g. Planning Department
h. Financing Department
i. Wildlife Controller (Coordinator): (To oversee the daily activities and analyze the collected data and carry out risk assessments in order to develop and implement the WHMP).

Financial Resources Identification: In coordinating with Planning and Financing Departments, the Airport Operator should determine the most appropriate wildlife monitoring and dispersing tools to be purchased and the training to be provided.

Step3*: Responsibility Determination:

- The Airport Operator's responsibilities should be borne by the senior manager role and this should be specified in the aerodrome Safety Management System (SMS). The Wildlife Control Coordinator is in charge of the implementation of the WHMP. The Wildlife Control Operators carry out the required tasks and field work. A Wildlife Committee will ensure that all stakeholders are engaged in the WHMP.

- The assignment of actual roles, titles and tasks will vary from airport to airport. At smaller airports the roles might be divided or merged to just 1 or 2 levels. Larger airports will require larger, possibly dedicated teams. Some tasks or roles may be contracted to an external company or organization.

  *Note: see **Figure 2 – Organisation Chart** ((this organization chart may be differ from one State to another).*

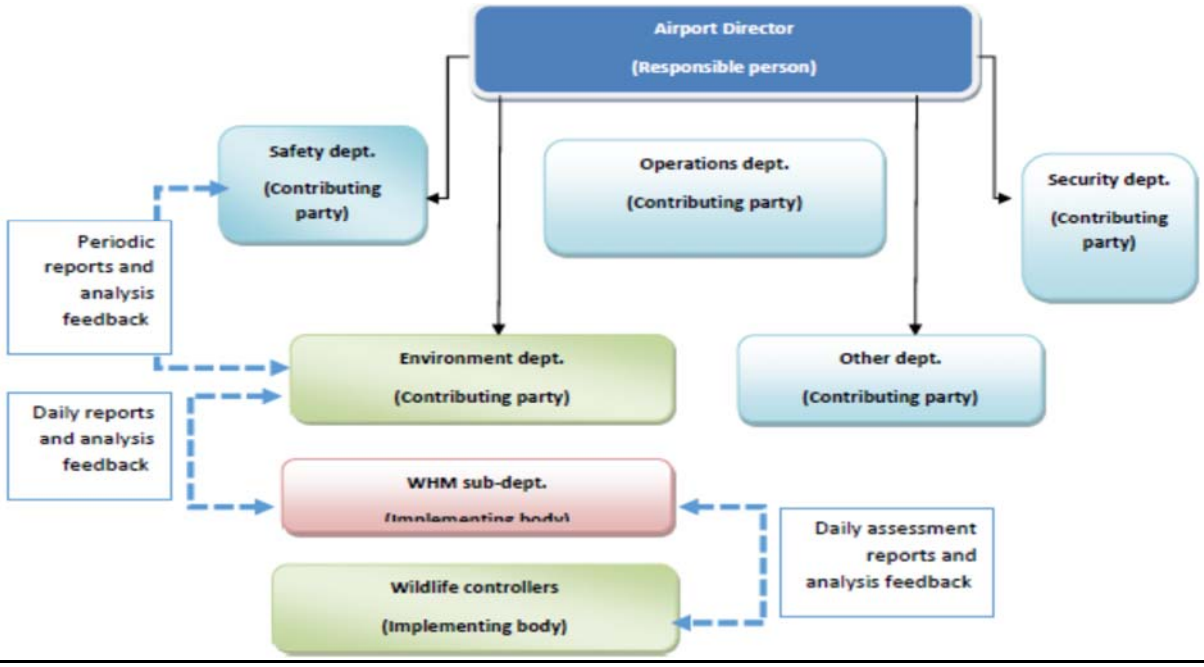


Figure 2: Organisational Chart

Roles & Responsibilities of Wildlife Hazard Management (Coordinator) and Relevant Team (Front-Line Personnel (Wildlife Controllers)):

1. Monitoring birds local movements area on/in the airport vicinity using one of the monitoring tools from the highest point at airport (as much as possible) especially the airport movement area with the aim of quick intervention in case of presence of such wildlife hazards to prevent the likelihood of bird strikes or any other damaging collisions.
2. Daily inspections and patrolling of the airport movement area to verify wildlife hazard and/or wildlife hazard attractants absence.
3. Periodical inspection of the wildlife hazards attractants on/in the aerodrome vicinity.

4. Wildlife hazard management and control relevant records and checklist filling out and keeping.
5. Raising up weekly and monthly reports conveying the current situation of his activities, performance, and any other relevant duties.
6. Keeping in contact with quick reaction with the ATC department in case of any emergency notifications regarding wildlife existence.
7. Coordinate the activities of the WHMP with air traffic control (ATC) and other stakeholders and contributors (as mentioned in the following flowchart).
8. Bird/wildlife observations, control and reporting.
9. Review strike reports, monitor daily activity records and maintenance reports to determine the requirements for short- and long-term management plans, and this information should be passed to managers accountable for safety on a regular basis at least on monthly basis (Ref: ICAO Service manual part 3).
10. Regular coordinating with WHMP other contributing parties and informing them with their roles and responsibilities in WHMP implementation.

    Note: ***Appendix E Key Roles and Responsibilities*** *provides a guide for the key roles and responsibility, for further information can be found: ICAO Airport Service Manual, part 3, Wildlife Control and Reduction, 3.3 Role of the Airport Operator and 3.4 Role of Bird/ Wildlife Strike Control Coordinator and ACI Wildlife Hazard Management Handbook Section 2.*

Step 4*: Needed for Habitat Modification and Land Use Planning:
Hazards attractants recognizing (description of wildlife habitats and resources): Habitat management is the heart of airport's Bird/Wildlife Hazard Management Program because it offers ecologically based, long-term measures for reducing the number of hazardous birds/wildlife at the airport. Before undertaking activities to manage the environment, it is important to first carry out an Ecological Survey (refer to item (3.1.2) of the airport and surrounding area to identify sources of food, water and shelter attractive to wildlife on and in the vicinity of the airport.
Categorized the hazard as the following:

- **1st Landscape Category** which is the airport itself, where habitats and the wildlife using them will be described in detail. This will rely on site-specific field work and standard techniques for describing vegetation communities (e.g., Ecological Land Classification) and wildlife communities, their use patterns and seasonal variations that have been observed or that might be expected.

- **2nd Landscape Category** which is the nearby lands those are not under direct control of the airport. The physical area included in this category generally includes lands up to 8 km from the airport reference point, which should include an area of sufficient size to provide an adequate picture of wildlife movements through the airspace identified later in this document. This assessment is largely based on existing information and remotely sensed habitat analysis rather than site-specific field work. It will describe the location of moderately hazardous land use practices such as wastewater discharge plants and sewage lagoons, crop production, recreational sites and managed or created wildlife habitats. There is no requirement under the regulation to manage these lands however it is important to be aware of potentially hazardous off airport land uses.

- **3rd Landscape Category** which is the determination of the presence of extremely hazardous land use practices that may be many kilometres from the airport. At a minimum, food waste disposal sites, outdoor composting and commercial fish plants will be mapped when they occur within 15 km of the airport reference point. Such features may be mapped at greater

distances where wildlife associated with them may become a hazard to aircraft using the airport.

3.2.3 Phase II: Implementation Phase

Step 5*: WHMP Operational Process:
The Wildlife Hazard Implementation Process should have formal mechanism to ensure that the Wildlife Hazard Management Plan (refer to item 3.1.2 in Establishment Phase) will be implemented effectively for that's the following procedures should be followed (Figure 3):

1st Administrative Mechanism

2nd Control Wildlife Mechanism including:

a. Habitat (wildlife hazard attractants) management mechanism on/in the airport vicinity.
b. Using most suitable and effective dispersing tools (removing hazardous wildlife).

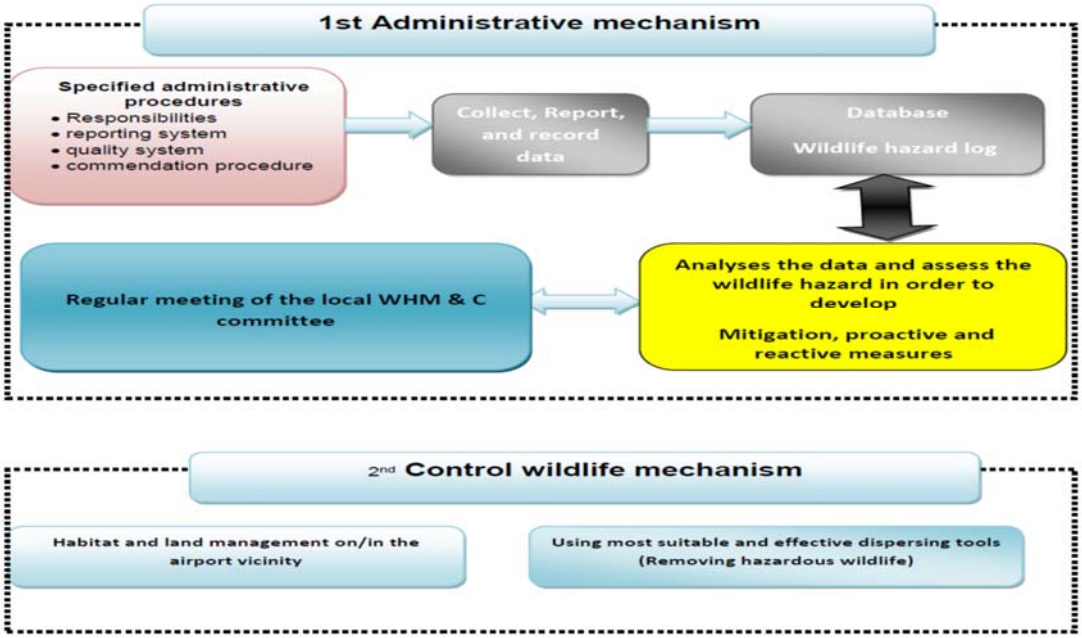


Figure 3

1st Administrative Mechanism

- For effective implementation the Airport Operator should have specified administrative procedures whether to activate the key person responsibilities, writing reports and quality system include documents control system
- Senior airport staff will be responsible for the implementation of this WHMP. This includes the acquisition of the various permits, the provision of training and awareness programs and the review and submission of the annual strike reports and two-year updates.
- Senior management, or their designate, will be responsible for coordinating, supervising and the overall management of the WHMP on a long-term and a daily basis at the site-specific level. This will include the nomination of the key Wildlife Management Officer, co-ordination of training, safety assurance and ensuring that the necessary equipment is available.

- **Appendix E - Key Roles & Responsibilities** provides the roles and responsibilities for all key person

  Note: Further information can be found: ICAO Airport Service Manual, Part 3, Wildlife Control and Reduction, 3.3 Role of The Airport Operator and 3.4 Role Of Bird/ Wildlife Strike Control Coordinator and Wildlife Hazard Management Handbook Section 2.

- Regular meeting of the Local Wildlife Hazard Management and Control Committee.

- Wildlife Hazard Management on an airport often requires communication, cooperation, and coordination among various groups on the aerodrome. Establishment of the Airport Wildlife Committee is required to facilitate this communication, cooperation and coordination. This committee might be included within the Safety Management Committee.

  Members:

  a. Airport Operator.
  b. Bird/Wildlife Department Team.
  c. Maintenance Department Representative/s.
  d. Planning Department Representative/s.
  e. Financing Department Representative/s.
  f. Operations Department Representative/s.
  g. ATC Representative/s.
  h. Security Department Representative/s.
  i. Environment Department Representative/s.
  j. Agriculture Department Representative/s.
  k. Airport Using Airlines Representative/s.
  l. Local Runway Safety Team Representative.

  Roles and Responsibilities:

  a. Review strike data collected.
  b. Assess bird/wildlife risks.
  c. Summarize trends in order to evaluate and determine what effective and most suitable control measures should be implemented in order to manage the bird/wildlife hazards.

  Committee Meeting Intervals:
  Based on the airport complexity and the level of bird/wildlife existence (recommended monthly).

- An integrated approach is needed to coordinate throw the airport organizations. It is important to have effective communication between those involved in bird/wildlife dispersal and air traffic control. Upon receipt of notice of a specific wildlife threat, air traffic control should issue appropriate warnings to aircraft on and in the vicinity of the airport. (Aircraft operators also are part of such an integrated approach by implement their roles upon receipt of the warning of a specific threat.)

  Note: Further information can be found: ICAO Airport Service Manual, Part 3, Wildlife Control and Reduction, Chapter 5.

Example of communication procedures should be stated in Wildlife Management Plan *(see figure 4)*:

1. Information will be provided directly from the wildlife observer on duty to Air Traffic Services (ATS) via radio contact.
2. Wildlife observer responsible for ensuring that updated wildlife information is provided to ATS immediately if an urgent situation arises

and on a regular basis depending on the current conditions, or when requested by ATS.

3. ATS deployment any information received from aircraft operator concern wildlife observations to wildlife observer in a timely manner.
4. ATS will provide information to pilots on current wildlife hazards and will ask pilots to report any wildlife observations to ATS especially those observed while taxiing.

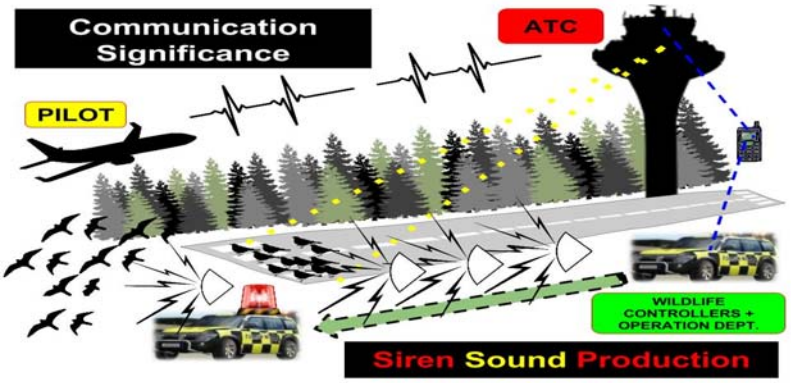


Figure 4

Further information can be found: ICAO Airport Service Manual, part 3, 3.4 Role of Bird/ Wildlife Strike Control Committee- ACI Wildlife Hazard Management Handbook item 2.5

2nd: Wildlife Control Mechanism (*Operational Mechanism*)

Habitat (Wildlife Hazard Attractants) Management Mechanism on/in the Airport Vicinity

- The airport's WHMP should provide details on the actions and procedures necessary to manage both habitat and wildlife given the specific local conditions and considerations Actions to deal with wildlife on a daily basis starts with patrols and inspections, observation of wildlife and other conditions, making interventions and assessing the response to inventions. It is also crucial to record all actions and observations in order to be able to review the effectiveness of the WHMP and development improvements.

- After working hazard identification and analysis (item 3-1-1) airport operator should have machoism to control of wildlife attractants through the following:
    a. Avoid establishment such kind of wildlife attractants anymore in the airport new projects or expanding.
    b. Reduce the wildlife attractants from its original source as much as possible.
    c. Destroying the food chain of such wildlife species at airports by using a series of insecticides, herbicides and rodenticides applications.
    d. Management of airport's airside ground cover as appropriate with its relevant wildlife species and its behaviours.
    e. Choosing the optimum way of habitat modification based on the existing and expected wildlife.
    f. Definitely short grass cover is more convenient for visual and physical access of wildlife control team.
    g. Eliminate all standing water on an airport to the greatest extent possible.
    h. Modify waste water oxidation ponds whether by monitoring and dispersing birds regularly to form a wildlife plugged zone (WPZ) or covering it using nets or any other relevant suitable techniques (exclusions techniques).

i. Proper fencing installation.
j. Others.

Using Most Suitable and Effective Dispersing Tools

- Repellent and harassment techniques should be used to keep hazardous wildlife away from specific areas on or near an airport. The long-term cost-effectiveness of repelling hazardous wildlife does not compare favourably with habitat modification or exclusion techniques. Wildlife will return as long as the attractant is accessible. However, habitat modification and exclusion techniques will never rid an airport of all hazardous wildlife. Repellent techniques are a key ingredient of any wildlife hazard management plan.

- Repellents work by affecting the animal's senses through chemical, auditory or visual means. Habituation or acclimation of birds and mammals to most mechanical repellent techniques is a major problem. When used repeatedly, without added reinforcement, wildlife soon learns that the repellents or techniques are harmless and the repellents or techniques are ignored.

  When Using Repellents, Four Critical Factors should be Remembered:
  1. there is no single solution to all problems;
  2. there is no standard protocol or set of procedures that is best for all situations. Repelling wildlife is an art and a science. Motivated, trained and suitably equipped personnel who understand the wildlife on the airport are critical for the successful use of repellents;
  3. each wildlife species is unique and will often respond differently to various repellent techniques. Even within a group of closely related species, such as gulls, the various species will often respond differently to various repellent techniques; and
  4. to lessen habituation to repellent techniques:
     - use each technique sparingly and appropriately when the target wildlife is present;
     - use various repellent techniques in an integrated fashion; and
     - Reinforce repellents with occasional lethal control (only when necessary depredation permits are in place) directed at abundant problem species.

- Advances in electronics, remote sensing and computers have resulted in "intelligent'' systems that can automatically dispense repellents (for example, noisemakers, chemical sprays) when targeted wildlife enter selected areas. These devices are used to reduce habituation and increase the effectiveness of other repellent techniques. It should be remembered that automated repellents are not a substitute for trained people on the ground, who can respond appropriately to incursions by various wildlife species, and should be considered only when more traditional methods of control and dispersal have proved ineffective.

Note: for further information can be found: ICAO Airport Service Manual, Part 3, and chapter 8 Wildlife Control and Reduction and ACI Wildlife Hazard Handbook section 4

3.3 WHMP Periodic Evaluation

3.3.1 Purpose:

Aerodromes should have a process to review and evaluate the wildlife management plan to provide safety assurance that the plan is fully effective and correctly implemented. The review should be completed on an annual basis but also must include an on-going review process to ensure that the plans are always current and fully functional at all times.
Procedures to monitor and evaluate the effectiveness of bird or wildlife control strategies might include:

- Airport's WHMP include wildlife control performance monitoring, measurement and improvement systems;
- Personnel training, competence assessment and appraisal.

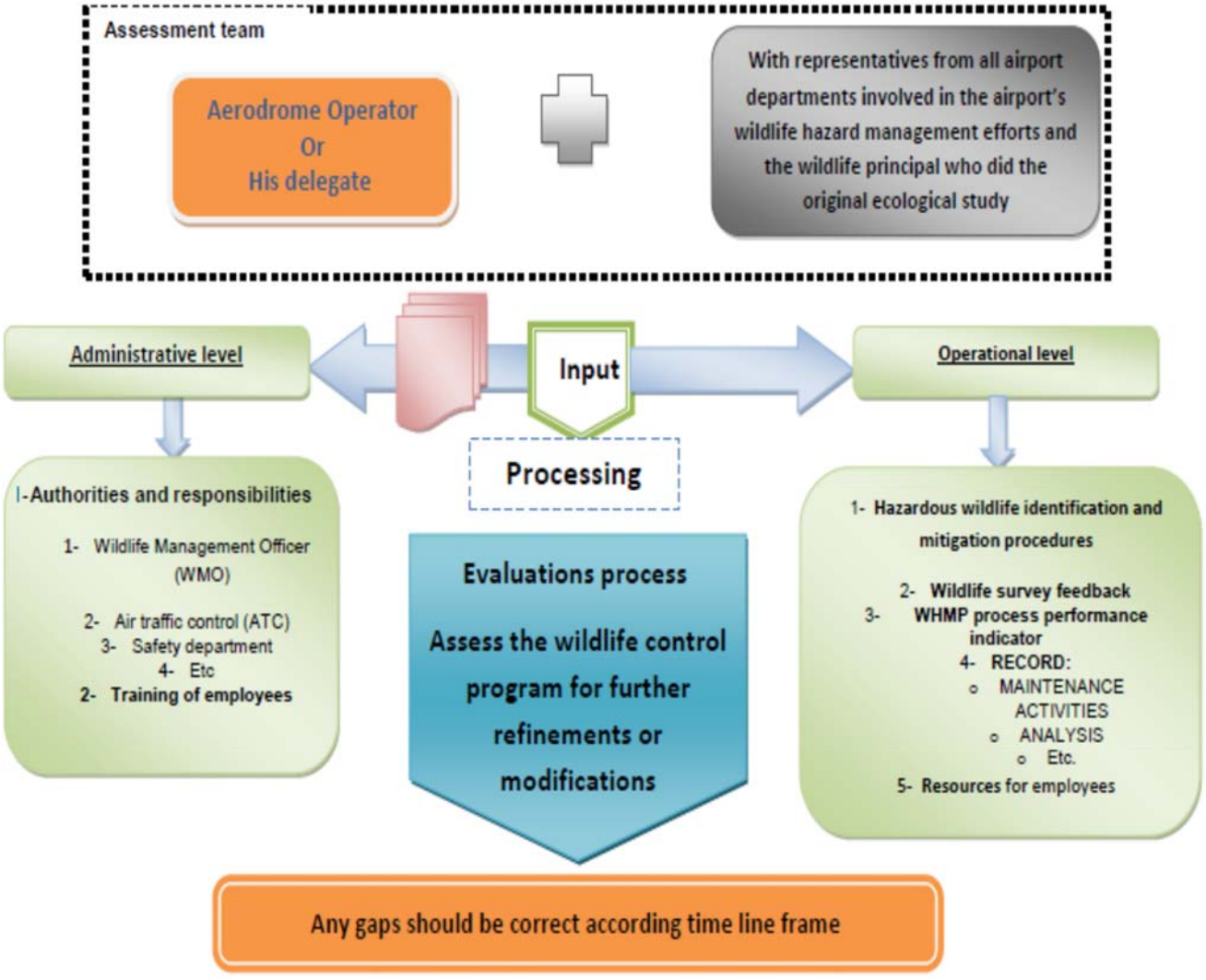


Figure 5 -Evaluation Process

3.4 Evaluation of the Airports Wildlife Hazard Management Program:

3.4.1 Administrative Level

i. **Evaluation the Authorities** and responsibilities: to ensure that all roles clearly defined and understood by all and the aerodrome personnel understand their roles and responsibilities

ii. **Evaluation the Training** of employees: to ensure the computability with the training program

Note: For further information about the training program can be found in the ICAO Airport Service Manual, Part 3, Chapter 4 Wildlife Control and Reduction and ACI Wildlife Hazard Handbook Section 5

3.4.2 Operational Level: Assessment should include at least the following:

i. **Evaluation The Hazardous Wildlife Identification and Mitigation Procedures:** include assessment the records of any habitat modifications and adjacent land use management which will consequently affect the presence of wildlife (time, locations, dates, migratory flyways, numbers, etc.…).

ii. **Wildlife Survey Feedback:** is a valuable tool for aerodromes to ensure their wildlife management and habitat plans are effective, meet all regulations and standards required (ATC, Airlines and ……etc.).

iii. **Evaluation the WHMP Process Performance Indicator*:** Performance indicators are critical to determine the need for enhancement or modification. It is also very necessary because actions to reduce one wildlife hazard will inevitably result in improved conditions for some other wildlife species.

- a- The number of wildlife strikes;
- b- Strike rate;
- c- Damage associated with strikes;
- d- Individual species' hazard assessments;
- e- Risk rankings for airport; and
- f- The status of action items that have been recommended in the plan.

**Taken together, these seven measurements will form an effective and objective measurement of performance of the WHMP for airport. The hazard and risk assessment will be updated and compared to the previous assessments in the WHMP every two years (or earlier if there is a significant change in hazards or risk). A discussion of any changes will be provided. Feedback from airport users will be sought and reported in time for each two-year update this will help determine if the wildlife program is being responsive to their needs.*

3.4.3 Evaluation of the Keeping Records:

a) **Records of wildlife activity**, wildlife strikes, and wildlife management actions.

b) **Maintenance activities** and any other corrective and preventative actions: keep records of any corrective and preventative actions serving wildlife hazard management and control concept, such actions might be installing or repairing fencing, thinning trees, clearing construction debris, applying pesticides or repellents, conducting grass-height

management, installing netting in hangers or wires over ponds or oxidation tanks, and regarding pavement or grass areas to eliminate standing water.

c) **Recorded Information Analysis:** the information recorded will be most useful if it is summarized into monthly and annual statistics. The use of computerized database systems customized to provide summaries of wildlife control activities is recommended.

Note: Furthermore, without accurate records and proper evaluation, it might be difficult to justify and defend certain management actions such as wildlife removal.

d) **Evaluation of Resources for Employees:** Periodic analyses of daily wildlife reports, will reveal:

- The effectiveness of applied control techniques for various wildlife species;
- The effectiveness of different dispersal techniques at different times of the day and under different weather conditions; and
- The amount of time wildlife remains dispersed.

Note: see figure 5 -Evaluation Process

APPENDIX A

WILDLIFE HAZARD MANAGEMENT ASSESSMENT CHECKLIST

Name of Aerodrome: Inspection Date: Name of Operator: Inspector(s) Name (s): Regulation ……						
	Item	Reg Ref	Yes	No	N/A	Remark
1.	Has Bird/Wildlife Control Officer(s) at the site been appointed and responsibilities assigned?					
2.	Has a training programme been developed to train those involved in Bird/Wildlife Control Programme?					
3.	Have the control officer(s) being trained accordingly?					
4.	Has the Bird/Wildlife Control Co-Coordinating Committee been established with well-defined responsibilities?					
5.	Has a Bird/Wildlife Control Programme (Management Plan) been developed?					
6.	Is level of implementation of measures in control programme (including those below) satisfactory?					
7.	Does the Aerodrome Operator maintain an observation log? Does the content of the log give an indication of the actual status during inspection					
8.	Does the aerodrome operator on a regular basis remove the attraction to birds particularly water, food, nesting sites and resting places?					
9.	Does the operator maintain a wildlife/bird dispersal log? Does the content of the log give an indication of the actual status during inspection?					
10.	Does the Aerodrome Operator regulate the creation of refuse dumps that would attract birds in the vicinity of the aerodrome where the safety of aircraft operations is					
11.	Has a reporting procedure been documented covering all aspects of the Bird/Wildlife Control Programme?					
12.	Does the Aerodrome Operator keep records of timely reports on bird strike incidents or accidents occurring at the aerodrome?					
13.	Does the Aerodrome Operator submit reports to the CAA for onward submission to ICAO on a regular basis, bird strike reports to facilitate effective use of the IBIS programme in accordance with eac139-20?					
14.	Does the operator make available information on the presence of birds and associated hazards to ATC for advising arriving and departing aircrafts?					
15.	Does the Aerodrome Operator take active part in workshops on bird hazard control and reduction organized by ICAO and other relevant bodies for exchange of views and experiences conclusion?					
16.	Has a list of all bird/wildlife attractants at the aerodrome been completed?					
17.	Has a list of all birds/wildlife surrounding the aerodrome been completed?					
18.	Has a Land Use Plan been established with regard to effective land use on and off the aerodrome as it pertains to the bird/wildlife control programme?					
Inspector's Remarks: Recommendation: Name Of Inspector:_____Sign:_____Date:___						

APPENDIX B

DATA COLLECTION TEMPLATE FOR OBSERVED WILDLIFE

Wildlife Description	Location and Round Figure of No.				Movement period Season/ month
	1st point	2nd point	3rd point	4th point	
White Stork					**August**
Prey					**May- Jun- July**
Water Birds					**From September**
Others					**all over the year**

APPENDIX C

RISK ANALYSIS

Table Appendix C-1: Probability

Qualitative Definition	Meaning	Value
Frequent	Likely to occur many times (has occurred frequently)	3
Occasional	Likely to occur sometimes (has occurred infrequently)	2
Remote	Unlikely, but possible to occur (has occurred rarely)	1

Table Appendix C-2: Severity

Qualitative Definition	Meaning	Value
Major Damage	Aircraft may incur damage or structural failure that adversely affect the structure strength, performance, or flight characteristics and that would normally require major repair or replacement of the affected component, or make it inadvisable to restore aircraft to airworthy condition.	C
Damage	Aircraft may incur at least some damage (destroyed, substantial, minor, or unknown) from strike	B
Effect on Flight	Aborted takeoff, engine shutdown, precautionary landing, or other	A

Table Appendix C-3 Probability /Severity

	Severity		
Probability	**Major Damage C**	**Damage B**	**Effect on Flight A**
Frequent 3	**3C**	**3B**	**3A**
Occasional 2	**2C**	**2B**	**2A**
Remote 1	**1C**	**1B**	**1A**

APPENDIX D

GAP ANALYSIS FOR WILDLIFE HAZARD MANAGEMENT PROGRAMME IMPLEMENTATION

Priority Level	Target state	Current State	Reg. Ref.	Remarks
High	Ecological study	○yes ○partial ○no		
High	Events and Strikes records	○yes ○partial ○no		
High	Other wildlife damaging collision records	○yes ○partial ○no		
High	Wildlife species identification	○yes ○partial ○no		
Medium	Wildlife species numbers and sizes	○yes ○partial ○no		
High	Wildlife locations on/in aerodrome vicinity	○yes ○partial ○no		
Medium	Daily and seasonal occurrence records	○yes ○partial ○no		
High	Recognizing wildlife attractants	○yes ○partial ○no		
High	Most significant wildlife species identification	○yes ○partial ○no		
High	Most potential date and time of event occurrence identification	○yes ○partial ○no		
High	Migratory birds flyways identification	○yes ○partial ○no		
High	Flyway altitude identification	○yes ○partial ○no		
High	Migratory birds flyway interference with aircraft pathway mapping	○yes ○partial ○no		
High	Most important wildlife gathering points identification and mapping	○yes ○partial ○no		
High	Responsible person determination	○yes ○partial ○no		
High	Wildlife controllers determination	○yes ○partial ○no		
High	Wildlife controllers qualifications and training requirements identification	○yes ○partial ○no		
High	Providing the needed training for both wildlife controller and other airport personnel	○yes ○partial ○no		
High	Wildlife attractants modifications procedures identification	○yes ○partial ○no		
High	Individual roles and responsibilities assignment	○yes ○partial ○no		
High	Resources identification	○yes ○partial ○no		
High	Suitable wildlife control strategies determination	○yes ○partial ○no		
High	Suitable wildlife control measures (Monitoring and Dispersing tools) determination	○yes ○partial ○no		
Medium	Daily inspection checklist preparation	○yes ○partial ○no		
Medium	Weekly inspection checklist preparation	○yes ○partial ○no		
Medium	Monthly inspection checklist preparation	○yes ○partial ○no		
Medium	Actions taken records	○yes ○partial ○no		
Medium	Wildlife hazard management and control internal committee records	○yes ○partial ○no		
Medium	Wildlife hazard management and control internal committee recommendations and enforcement follow-up sheets	○yes ○partial ○no		
Medium	Wildlife hazard management and control national committee records	○yes ○partial ○no		

Priority Level	Target state	Current State	Reg. Ref.	Remarks
Medium	Wildlife hazard management and control national committee recommendations and enforcement follow-up sheets	○yes ○partial ○no		
Medium	WHMP implementation evaluation forms	○yes ○partial ○no		
Medium	WHMP evaluation forms for its effectiveness	○yes ○partial ○no		

APPENDIX E

KEY ROLES AND RESPONSIBILITIES

Title	Key WHMP Responsibilities
Airport Manager	• Implementation of this WHMP; • Acquisition of the various permits; • Provision of training and awareness programs; • Review and submission of the annual strike reports and two year updates.
Assistant Manager	• Coordinating, supervising and the overall management of the WHMP; • Nomination of the key Wildlife Management Officer (WMO); • Co-ordination of training, safety assurance; • Ensuring that the necessary equipment is available.
Wildlife Management Officer (WMO)	• Maintenance of the Wildlife Management Log (e.g., including strike data, details on wildlife numbers and activity; • WHMP measures undertaken, firearm use details; • details on the use of lethal reinforcement and monthly summaries); • Co-ordination of the monitoring program; • Preparation of the annual strike report; • Ensuring that Airport operations are consistent with the requirements of the WHMP; • Ensuring that the appropriate permits are current and present on-site; • Undertaking deterrent activities; • Ensuring all activities are undertaken following standard practices and safety protocols; and • identification of equipment, resource and training needs.
Back-up to WMO	• Filling in for WMO during vacations, lunch, sick time etc.
Air traffic Control (ATC)	• Informing wildlife hazards controllers, environmental dept. and operations dept. in case of observing any of these birds and/or wildlife gathering on/in airport vicinity or when receiving any relevant notification from pilot. • Warning pilots in case of wildlife observations (risky operating environment) and hazards expectation. • Report any unsafe conditions including hazardous wildlife on or in airport vicinity to the appropriate airport personnel anytime they are observed. • Actively attend the local wildlife hazard control committee meetings and any other relevant meetings.
Safety Department	• Receiving all wildlife strikes and events with the aim of risk assessment formation to ease the future forecasting based on accurate database and risk assessment strategy. • Actively attend the local wildlife hazard control committee meetings and any other relevant meetings

Title	Key WHMP Responsibilities
Maintenance Department	• Periodical inspection of the wildlife attractants (such as ponds, transfer stations and water treatment facilities) or airport infrastructure (such as fence) which ease the wildlife invasion. • Corrective maintenance actions and preventative maintenance actions to be taken for wildlife hazards management and control verification.
Environmental Department	• Receiving wildlife strike reports from the wildlife hazard coordinator or wildlife hazards controllers. • Wildlife existence notification receiving from ATC and then verification of wildlife hazards controllers moving to the place of wildlife existence. • Database formation including wildlife species, numbers, sizes, date and time of existence, local movements, behaviours, the most suitable way of dispersing, etc… • Wildlife hazards management plan evaluating for effectiveness and verification of its compliance with the original wildlife hazard assessment (Ecological study). • Preparing under direct supervision of aerodrome operator for the local wildlife hazards control and management committee and other relevant meetings. • Follow-up decisions and recommendations taken by the mentioned above committee.
Other governmental municipalities (such as agriculture offices/corporations, solid waste and sewage disposal offices / corporations, state national environmental offices, natural reserves corporations, defense, representatives of the major airlines using airport, even the private sectors located in airport vicinity and others)	• Advance cooperation and coordination with airport management regarding land use planning for those located in airport vicinity. • Exchange information on research and development in airport wildlife control. • Providing and updating much relevant information for those in the aviation community.

APPENDIX F BIRD STRIKE REPORTING FORM

Send to:

Operator

Aircraft Make/Model

Engine Make/Model

Aircraft Registration

Date day month year

Local Time

dawn day dusk night

Aerodrome Name

Location if En Route

Height AGL ft

Speed (IAS) kt

Phase of Flight

parked		en route	
taxi		descent	
take-off run		approach	
climb		landing roll	

Part(s) of Aircraf

	Struck	Damaged
radome		
windshield		
nose (excluding above)		
engine no. 1		
2		
3		
4		
propeller		
wing/rotor		
fuselage		
landing gear		
tail		
lights		
Pilot/static head		
antenna		
tail rotor		
helicopter transmission		
other (specify)		

Effect on Flight

none		penetration of airframe	
aborted take-off		vision obscured	
precautionary landing		engines shout down	
forced landing		engine ingestion	
fire		engine uncontained failure	
penetration of windshield		other (specify)	

Sky Conditior

no cloud	
some cloud	
overcast	

Precipitation

fog	
rain	
snow	

Damage (aircraft)

royed	
substantial	
minor	
none	
unoknown	

Injury (index of)

fatal	
serious	
minor	
none	
unoknown	

Bird Species

Confirmed Bird Species

Number of Birds

	Seen	Struck	
1			A
2-10			B
11-100			C
more			D

Size of Birds

small	
medium	
large	

Pilot Warned of Bird

yes no

Remarks *(describe damage, injuries and other pertient information)*

Reported by

Report Number:

THIS INFORMATION IS REQUIRED FOR AVIATION SAFETY

APPENDIX 3J

RASG-MID SAFETY ADVISORY – 12

(RSA-12)

November 2016

MID-Region

LASER Attacks Safety Guidelines

Date of Issue:	November 2016
Revision No. and Date:	First Revision – September 2017
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Owner:	RASG-MID

These guidelines are developed by the LASER Attacks team - Runway and Ground Safety Working Group (RGS WG), as part of MID-RAST/RGS/6 DIP deliverables, based on the work of the Egyptian Civil Aviation Authority in collaboration with the ICAO MID Regional Office.

Disclaimer

This document has been compiled by members of the aviation industry to provide guidance for civil aviation regulators, aerodrome operators and other stakeholders in order to enhance aviation safety. It is not intended to supersede or replace existing materials produced by the States national regulators or in ICAO SARPs. The publication of this document does not prejudice the National Regulator's ability to enforce existing national regulations. To the extent of any inconsistency between this document and the National/International regulations, standards, recommendations or advisory publications, the content of the National/International regulations, standards, recommendations and advisory publications shall prevail.

Regional Safety Advisory

TABLE OF CONTENTS

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INTRODUCTION

PURPOSE

This Guidance Material provides general information and advice on measures to protect pilots of civil aircraft from accidental laser beam strikes, on or in the vicinity of an aerodrome. This guidance should be used in the planning and control of advertising, entertainment, and similar visual displays using visible laser light. This Guidance Material is unlikely to prevent willful laser attacks against aircraft, but it is the intension of using it as a control tool for malicious laser attacks.

It should be of interest to air Traffic controllers, aerodrome operators, and to the operators of laser shows. It may also be of interest to pilots and airlines.

GLOSSARY

Irradiance (E):
The power per unit area expressed in watts per square centimeter (W/cm^2) or watts per square meter (W/m^2). Small values may be expressed as micro (10^{-6}) watts per square centimeter ($\mu W/cm^2$) or nano (10^{-9}) watts per square centimeter (nW/cm^2).

Laser:
1) An acronym for light amplification by stimulated emission of radiation.
2) A device that produces an intense, coherent, directional beam of optical radiation by stimulating emission of photons by electronic or molecular transition to lower energy levels.

Maximum Permissible Exposure (MPE):
The internationally accepted maximum level of laser radiation to which human beings may be exposed without risk of biological damage to the eye or skin.

Protected Flight Zones:
Airspace specifically designated to mitigate the hazardous effects of laser radiation.

GENERAL

The development of the laser and the industrial application of laser technology stand out as some of the most significant scientific contributions of the 20th century. Presently, lasers are found virtually everywhere, from supermarkets and schools to satellites and operating rooms.

However, if used improperly, laser energy also poses a significant biohazard. Consequently, even the most innocuous laser pointer can become a safety hazard, either through direct bio-effects or by causing a disruption of critical performance tasks in hazardous situations.

Lasers can produce a beam of light of such intensity that permanent damage to human tissue, in particular the retina of the eye, can be caused instantaneously, even at distances of over 10 km. At lower intensities, laser beams can seriously affect visual performance without causing physical damage to the eyes.

Protection of pilots against accidental laser beam strike has become a serious factor in aviation safety with the advent of the laser light display for entertainment or commercial purposes.

Chapter 1

REGULATORY

The need of provisions which establishes and enforces regulations for commercially available laser devices based on safe exposure criteria derived from current medical knowledge is highly considered.

First, lasers fall into five general categories: (the higher the class number, the greater the hazard) Class I, Class II, Class IIIa, Class IIIb, and Class IV. Class I includes devices, such as laser printers and DVD players, that have enclosed lasers designed to prevent the escape of any harmful radiation. Class II lasers emit visible light and are considered too bright to view for extended periods, but momentary viewing is not considered hazardous. Class IIIa devices are hazardous if the beam is viewed directly, but cannot produce a reflected beam hazard unless viewed for extended periods at close range. Most commonly available laser devices, such as laser pointers and laser levels, are either Class II or Class IIIa devices.

Furthermore, although not manufactured for use as "legal" laser pointers, some Class IIIb lasers packaged as laser pointers can be purchased over the Internet. Momentary exposure to a Class IIIb laser can cause eye damage. More powerful Class IV lasers used in research, medical, industrial, and military applications can pose fire hazards, damage skin, and can cause significant eye damage even when viewed indirectly. Various safety precautions, including eye protection, are needed when working around these devices. While not widely available, these powerful lasers could potentially be used as a terrorist weapon to attempt to incapacitate a flight crew.

Most of the recent laser incidents may be attributable to the increasing availability and reduced cost of green laser pointers. Green lasers pose particular hazards to pilots because they are perceived to be about 35 times brighter than equivalently powered red lasers due to the fact that humans are so much more sensitive to green light.

One policy option that may be considered, is whether to apply different standards for laser output based on the color (wavelength) emitted by the device. Another option is to restrict the sale or establish tighter controls on the use of certain laser devices, i.e.: restricted sales of Class IIIa laser pointer devices in response to several incidents involving lasers directed at aircraft (it can be expressed in terms of power).

The Civil Aviation Authority has the right to adopt all protective measures required to prevent the committing of acts and offences against the safety and security of civil aviation, or on board aircraft of the national carrier, in accordance with the relevant international rules

To protect the safety of aircraft against the hazardous effects of laser emitters, the following protected zones should be established around aerodromes:

a) a laser-beam free flight zone (LFFZ);
b) a laser-beam critical flight zone (LCFZ); and
c) a laser-beam sensitive flight zone (LSFZ).

Geographical Identification of Hazard From Aerodrome Reference Point
Free Zone : Within 3 Nautical Miles (5.5 kilometers)
Critical Zone: within 10 Nautical Miles (18.5 kilometers) radius of the Extended Runway Centerline.
Sensitive Zone : beyond than 10 NM
NOTE : 1- If this is not possible, then the light display may represent a threat to flight safety and should not proceed. 2- Aerial fireworks displays should be limited to a height of 1500 ft above ground level.

ICAO Annex 14 figures, as shown below, may be used to determine the exposure levels and distances that adequately protect flight operations.

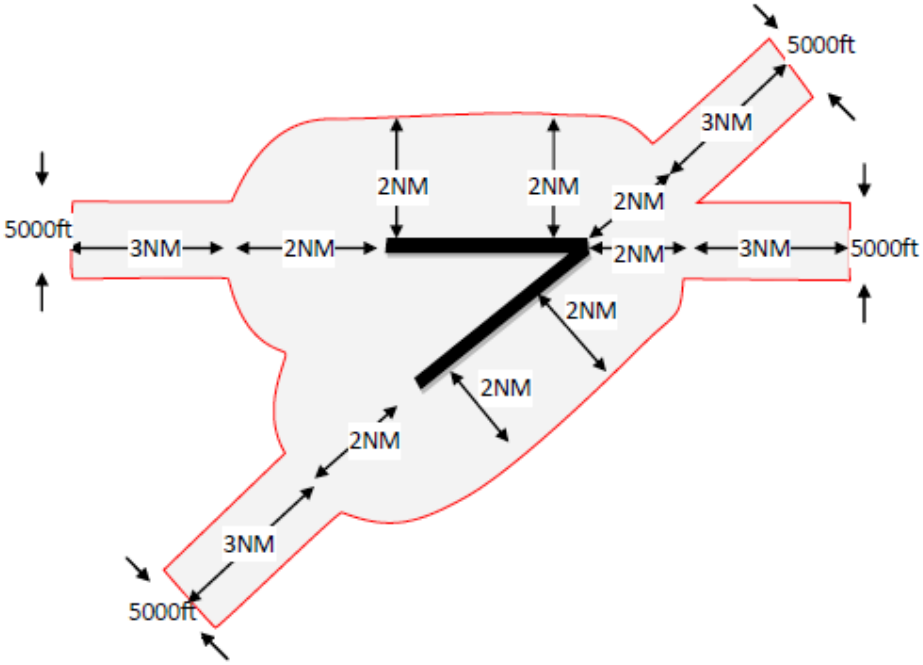


Figure 1: Multiple Runways LFFZ

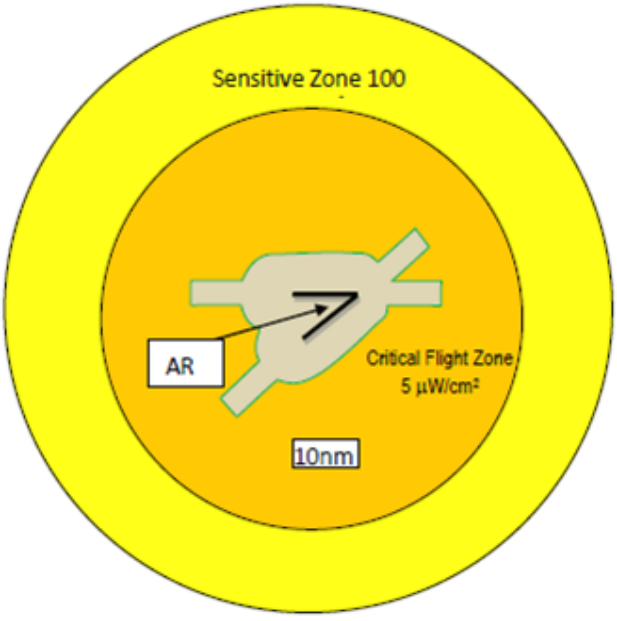


Figure 2: Multiple Runways LCFZ

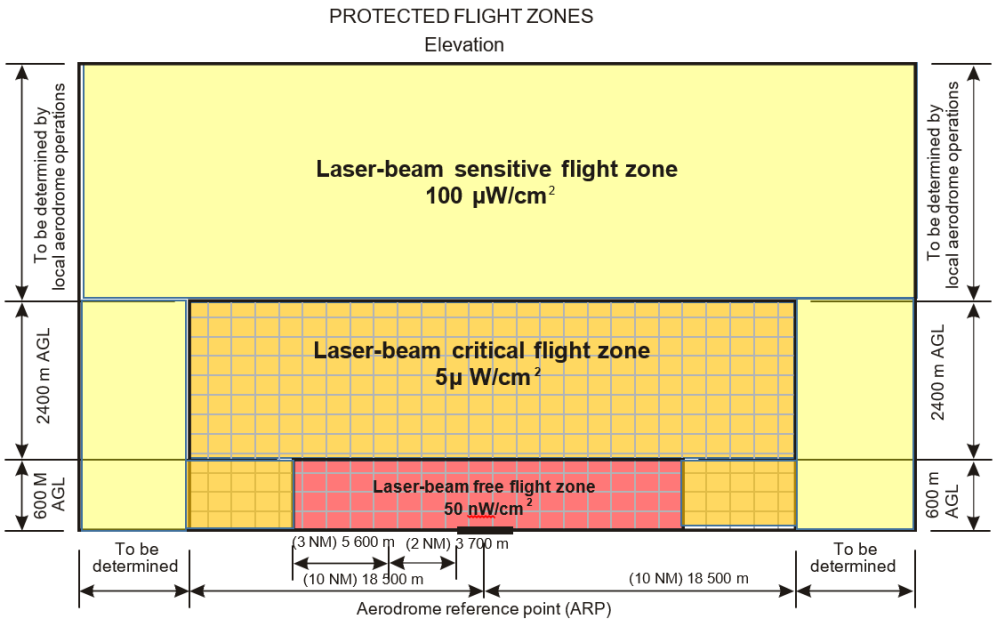


Figure 3: Maximum Irradiance Levels

The restrictions on the use of laser beams in the three protected flight zones, LFFZ, LCFZ, and LSFZ, refer to visible laser beams only.

Laser emitters operated by authorities in a manner compatible with flight safety are excluded from these restrictions. Typical examples of lasers used to support aviation include some cloud base or visibility measurement equipment, some bird harassing devices, and some aircraft docking guidance systems. Aerodrome authorities are to ensure that these lasers have the beam aimed in such a direction, and/or that the times of operation are controlled, to ensure no hazard is posed to aircraft operations.

In all navigable air space, the irradiance level of any laser beam, visible or invisible, is expected to be less than or equal to the maximum permissible exposure (MPE) unless such emission has been notified to the authority and permission obtained.

The protected flight zones are established in order to mitigate the risk of operating laser emitters in the vicinity of aerodromes.

The dimensions indicated for the various zones are given as guidance, but ICAO Doc 9815 advises that they have been found to provide for the safe operation of aircraft in the vicinity of aerodromes.

Laser-Beam Free Flight Zone

Within this zone, the intensity of laser light should be restricted to a level that is unlikely to cause any visual disruption. The irradiance should not exceed 50 nW/cm^2 unless some form of mitigation is applied. The level of brightness thus produced is indistinguishable from background ambient light.

Laser-Beam Critical Flight Zone

While the suggested extent of this zone is shown in the Figures, this zone may have to be adjusted to meet air traffic requirements.

Within this zone the irradiance should not exceed 5 $\mu W/cm^2$ unless some form of mitigation is applied. Although capable of causing glare effects, this irradiance will not produce a level of brightness sufficient to cause flash-blindness or after-image effects.

Laser-Beam Sensitive Flight Zone

The extent of this zone should be determined by the operations at the particular aerodrome. The LSFZ need not necessarily be contiguous with the other flight zones.

Within this zone the irradiance should not exceed 100 $\mu W/cm^2$ unless some form of mitigation is applied. The level of brightness thus produced may begin to produce flash-blindness or after-image effects of short duration; however, this limit will provide protection from serious effects.

Normal Flight Zone

The NFZ is any navigable airspace not defined as LFFZ, LCFZ or LSFZ. The NFZ should be protected from laser radiation capable of causing biological damage to the eye.

The maximum irradiance level (MIL), should be equal to or less than the maximum permissible exposure (MPE).

Chapter 2

HAZARD

The red laser pointer commonly seen in classrooms and conference venues are low-powered devices of less than one milliwatt (mW). These are normally with insufficient power to cause actual physical harm, although they still require care in their operation and use.

Green laser pointers are readily available with a maximum power rating of 5 mW, and are classified as more hazardous. The eye's maximum sensitivity to visible light is around the wavelength of a green laser, and the eye will interpret a green laser light of a given power as being up to 30 times brighter than a red laser of the same power. Direct eye exposure to a green laser beam can result in temporary visual impairment.

Some effort would be required to inflict actual eye damage with a 5 mW green laser pointer as both the low power and the eye's natural defense (blinking reflex) would combine to limit potential damage. However, some vendors are now advertising higher-powered (from 10 to 400 mW) green laser pointers which are definitely harmful, and can cause permanent eye damage.

The severity and duration of the vision impairment varies significantly, depending on the intensity and wavelength of the light, the individual's current state of light (or dark) adaptation, and even the person's skin pigmentation (eye colour). The effects of exposure to a laser beam include:

Distraction: The dazzling effect on the eye can be a major distraction, particularly in situations of high workload (e.g. take-off, approach, and landing).

Temporary Visual Impairment: Adverse visual effects that include: glare (a temporary disruption in vision caused by bright light within an individual's field of vision); flash-blindness (the inability to see, caused by bright light entering the eye) that persists after the illumination has ceased; and after-image (an image that remains in the visual field after exposure to a bright light).

Eye Injury: Temporary or permanent damage to the eye caused by exposure to laser light. Normally the result of direct exposure to prolonged or high power laser light.

Laser illumination of aircraft can cause distraction, disorientation, and discomfort for pilots resulting in a potentially hazardous situation during critical phases of flight.

Chapter 3

ROLE OF AVIATION KEY PLAYERS

Airline

The time and place of an unauthorized illumination of an aircraft by a laser is difficult to predict, although there is evidence that aircraft operating in certain locations, particularly around aerodromes, are increasingly likely to be subject to unauthorized illumination. Whenever practicable, flights within areas of recently reported laser or bright light activity should be avoided. Pilots operating in controlled airspace should obtain an ATC clearance before deviating from their cleared flight path, having first dealt with their immediate safety.

Pre-flight Procedures:

- Notices to airmen (NOTAMs) should be consulted for location and operating times of laser activates and alternate routes should be considered.
- Aeronautical charts should be consulted for permanent laser activities (theme parks, research facilities, etc.).

All AOC holders should ensure that their exposition contains guidance information for crews on the immediate actions to be taken to mitigate the effects if their aircraft is targeted by a laser illumination. In the event that a pilot encounters an unauthorized laser illumination of an aircraft, the following actions are recommended:

- Pilots should avoid looking directly at the source (priority is to minimize exposure effects).
- If your vision is affected, hand over control (assuming a two-pilot crew, and that the other pilot has not been affected).
- Crews manually flying aircraft fitted with modern autopilots and Flight Management Systems (FMS) might need to consider autopilot re-engagement, and use of FMS to aid flight path control.
- Turning up cockpit lighting may assist in overcoming the ‘flash’ after-effects (peripheral vision may still be effective).
- Do not rub the eyes after exposure.
- If any lingering effect is experienced, crew members should be encouraged to seek medical attention if the eye exposure to a laser is of more than transient duration.
- Report the occurrence immediately to ATC, and as soon as possible through your normal reporting channel.

An unauthorized illumination of an aircraft by a laser considered as an aircraft incident and therefore a pilot experiencing a laser illumination occurrence is required to take a follow-up action through reporting the details of the incident.

Air Traffic Service

As soon as possible following laser illumination occurrence, the flight crew should report the incident by radio to the appropriate ATC unit. Expeditious reporting will assist the Police in locating the source of the laser transmission(s).

The initial radio report to ATC should include the following:

- Aircraft call sign
- Nature of report (laser/ Illumination) & Colour
- Aircraft position & altitude at time of occurrence
- Location of origin of light source or relative direction and estimated distance from aircraft
- Any other information that might assist law enforcement.

All ATS units advised of a laser illumination occurrence will take mitigation actions (as appropriate) to provide relevant information for pilots:

- Announce to any following aircraft.
- Forward report to the aerodrome management for liaison to react.

Aerodrome Management

Aerodrome authorities are to ensure that any lasers around have the beam not aimed in the aircraft direction, and/or that the times of operation are controlled, to ensure no hazard is posed to aircraft operations.

In case of LASER attack reported, coordinate with the local police force to establish the most expeditious reaction to such events and provide them with a detailed report to assist in locating the source of the laser in order to enforce stop of such hazard.

Advise AIS to issue cautionary NOTAM in case of repeated exposure.

Contact the CAA as soon as possible following report of a Laser illumination Incident.

Additionally, Aerodrome should monitor the laser-beam free flight zone as part of aerodrome serviceability inspections.

Laser emissions of which exceeds any of the limits or penetrates the protected zones described shall be extinguished, screened or otherwise modified so as to eliminate the source of danger.

If laser violation detected during inspections, it should be assessed and surveyed as soon as possible to determine the extent of the infringements. If they exceed the limits specified, the aerodrome will raise a NOTAM.

For any new light works in the vicinity of the aerodrome, aerodrome notify to CAA which has the authority to take action in case of any potential deficiency.

Aerodrome management should direct Laser, light and firework Organizers to seek CAA acceptance prior to displays.

Refer to **Appendix A** Form 1, for a model of suspected laser beam /firework incident report.

Chapter 4

GUIDELINES FOR LASER, LIGHT AND FIREWORK DISPLAY ORGANIZERS

This chapter refers to procedures concerned with temporary laser light and firework displays.

For light and firework displays, Organizers should notify the appropriate authority (normally CAA, or through aerodrome management) of their proposed activity. To allow time to de-conflict or co-ordinate the activity, as well as promulgate warnings to the aviation community and establish any control measures considered necessary, notification needs to be given at appropriate time in advance.

The appropriate authority will examine the proposal based on the following guidelines. If no further information is required then appropriate warning action will be carried out. While the Display Organizer will not routinely receive written confirmation of this, if further information or action is required from the Display Organizer, the appropriate authority may contact the originator of the proposal to discuss suitable future courses of action.

It is of prime importance that light displays and fireworks are never directed at or towards aircraft or aerodromes. The Light Display organizer should also nominate a single point of contact, who will be directly responsible for the conduct of the actual event.

A person proposing to operate a light or a laser shall notify the appropriate authority if:

1. because of its glare or affect on a pilot's vision, the light or laser is liable to endanger aircraft;

2. for a laser, it would produce exposures in navigable airspace exceeding the maximum permissible exposure defined;

3. it is likely to endanger aircraft by being mistaken for:
   i. a light or part of a system of lights established or approved for display at or near an aerodrome; and
   ii. a light marking a hazard in navigable airspace; and

4. the location falls within the laser protection zones around an aerodrome.

Display organizers should be aware of the following geographical zone, within which CAA considers it necessary to impose restrictions in order to protect flight operations:
Within 18500m (10 NM) of an aerodrome's notified Aerodrome Reference Point (ARP) or similar, the following procedures should be adhered to:

a) Ideally, measures should be in place to prevent light escaping towards the aerodrome or along the extended runway centerline.

b) If this proves impractical, other precautions are to be taken to ensure that light displays do not impinge on safe flight operations, such as arranging for a direct telephone or radio communications link between the point of contact and relevant aerodrome, through which the Light Display can be terminated immediately on request from either an aircraft or the affected aerodrome.

NOTE: If this is not possible, then the light display may represent a threat to flight safety and should not proceed.

Elsewhere, although the light display is unlikely to affect aerodrome flight operations, the Light Display organizer should notify the authority to ascertain if there are any other aviation activities that may be affected by the display.

Refer to **Appendix A** Form 2, for a model of notice of proposal to conduct outdoor laser, light /firework operation(s).

Public Awareness

Product warning labels and product information shipped with laser devices could be enhanced to specifically warn of the dangers these devices pose to aviation safety. While current product labeling on lasers inform operators of the eye hazards posed by lasers, there may be widely held misperceptions that lasers cannot affect a pilot's vision because of the large distances the beam travels before reaching the aircraft. The general public may also lack a full appreciation for the visual demands during critical phases of flight and the potential consequences of visual distractions in the cockpit.

Besides conveying this information in materials shipped with laser products, such information could also be disseminated through public awareness campaigns.

Additionally, public education materials could convey strong messages regarding available criminal penalties and potential legal consequences of using lasers to maliciously target aircraft.

Appendix A

Forms

FORM 1

SUSPECTED LASER BEAM /FIREWORK INCIDENT REPORT	
Name	
Position (pilot, co-pilot, controller, etc.) Phone	
Type of vision correction worm at time of incident (spectacles/contact lenses) -	
Type of aircraft	
Aircraft Id or call	
Date and time of incident (UTC)	
Date and time report is being completed (UTC)	
Position (pilot, co-pilot, controller, etc.) Phone	
ENVIRONMENTAL FACTORS	
Weather conditions	
VMC/IMC	
Ambient light level (day, night, sunlight, dawn, dusk, starlight, moonlight, etc.)	
LOCATION OF INCIDENT	
Near(aerodrome/city/NAVID)	
Radial and distance	
Phase of flight	
Type/name of approach or departure procedure	
Heading/approximate heading if in turn	
Altitude(AGL), (MSL)	
Aircraft bank and pitch angles	
Angle of incidence	
Did the light hit your eye(s) directly or form the side?	
Light description	
Colour	
Nature of beam (constant/flicker/pulsed)	
Light source (stationary or moving)	
Do you feel you were intentionally tracked?	
Relative intensity (flashbulb, headlight, sunlight)	
Duration of exposure (seconds)	
Was the beam visible prior to incident?	
Position of light source (relative to geographical feature or aircraft)	
Circle the window where the light entered the cockpit: (Left) (left-front) (centre) (right-front) (right) other ----------	
Elevation of the beam from horizontal (degrees)	
EFFECT ON INDIVIDUAL	
Describe visual*/psychological/physical effects	
Duration of visual effects (seconds/minutes/hours/days)	
Do you intend to seek medical attention? *Note: This is recommended if even minor symptoms were experienced.*	
Effect on operational or cockpit procedures	

***Examples of common visual effects:**

After-image. An image that remains in the visual field after an exposure to a bright light.

Blind spot. A temporary or permanent loss of vision of part of the visual field.

Flash-blindness. The inability to see (either temporarily or permanently) caused by bright light entering the eye and persisting after the illumination has ceased.

Glare. A temporary disruption in vision caused by the presence of a bright light (such as an oncoming car's headlights) within an individual's field of vision. Glare lasts only as long as the bright light is actually present within the individual's field of vision.

This form may be used by local ATC or airline to report a suspected laser beam exposure or firework. When completed, the report should be forwarded to the competent authority as soon as possible for further investigation.

FORM 2

NOTICE OF PROPOSAL TO CONDUCT OUTDOOR LASER, LIGHT /FIREWORK OPERATION(S)	
To:	
From: (Applicant)	
Date:	
GENERAL IFORMATION	
Event or facility	
Applicant	
Address of activity	
Date(s) of activity	
Time(s) of activity	
Geographic Location of activity	
Longitude	---------- deg (°) -------- min (‘) -------- sec(“)
Latitude	---------- deg (°) -------- min (‘) -------- sec(“)
Determined by:	☐GPS ☐Map ☐Other (specify) --------
Ground elevation at site (above Mean Sea Level)	
Laser/Firework activity height (above ground level)	
Testing and alignment	
Operation	
BRIEF DESCRIPTION OF OPERATION	
ON-SITE OPERATION INFORAMTION	
Operator(s):	
On-site phone 1	
On-site phone 2	
Brief Description Of Control Measures	
ATTACHMENTS	
Number of laser / Firework configurations :	
List any additional attachments needed to evaluate this operation (could include maps, diagrams, and details of control measures).	
DESIGNATED CONTACT PERSON (IF FURTHER INFORMATION IS REQUIRED)	
Name:	
Position:	
Phone:	
Fax:	
E-mail:	
STATEMENT OF ACCURACY To the best of my knowledge, the information provided in this Notice of Proposal is accurate and correct.	
Name (if different from contact person):	
Position:	
Signature:	

References:

- ICAO Annex 14 Item 5.3.1.
- ICAO Doc 9815, Manual on Laser Emitters and Flight Safety.
- Egyptian Advisory Circular 00-23.
- UAE Civil Aviation Advisory Publication 49.
- UAE Civil Aviation Advisory Publication 65.
- Bahrain Civil Aviation Authority Obligation for the Operation Fireworks, Laser (Draft).

APPENDIX 3K

Status of Implementation of Aerodrome Certification in the MID Region

	State	Number of Int'l Aerodromes	Number of Certified Int'l Aerodromes	Percentage Certified
1	Bahrain	1	1	100%
2	Egypt	7	5	71%
3	Iran	9	4	44%
4	Iraq	6	2	33%
5	Jordan	3	2	67%
6	Kuwait	1	1	100%
7	Lebanon	1	0	0%
8	Libya	3	0	0%
9	Oman	2	2	100%
10	Qatar	2	2	100%
11	Saudi Arabia	4	4	100%
12	Sudan	4	3	75%
13	Syria	3	0	0%
14	UAE	8	8	100%
15	Yemen	5	0	0%
	Total	**59**	**34**	**58%**

APPENDIX 3L

Establishment of Runway Safety Teams (RSTs)

at international Aerodromes in the MID Region

(Updated 30 July2017)

	State	Number of Int'l Aerodromes	Number of established Runway Safety Teams	List of Aerodromes having established Runway Safety Team
1	**BAHRAIN**	1	1	Bahrain/Bahrain Intl (OBBI)
2	**EGYPT**	7	4	- Cairo/Cairo Intl (HECA) - Sharm El Sheikh Intl (HESH) - Hurghada Int'l (HEGN) - Marsa Alam Intl (HEMA)
3	**IRAN**	9	6	- Tehran/Mehrabad Intl (OIII) - Tehran/ IKIA Intl (OIIE) - Zahedan/Zahedan Intl (OIZH) - Yazd /Yazd Intl (OIYY) - Isfahan/Isfahan Int'l (OIFM) - Bandar Abbas /Bandar Abbas Intl (OIKB)
4	**IRAQ**	6		
5	**JORDAN**	3	1	- Aqaba/King Hussein Intl (OJAQ)
6	**KUWAIT**	1	1	Kuwait/Kuwait Intl (OKBK)
7	**LEBANON**	1		
8	**LIBYA**	3		
9	**OMAN**	2	2	- Muscat/Muscat Intl (OOMS) - Salalah/Salalah (OOSA)
10	**QATAR**	2	2	- Doha/Doha Intl (OTBD) - Doha/Hamad Intl (OTHH)

	State	Number of Int'l Aerodromes	Number of established Runway Safety Teams	List of Aerodromes having established Runway Safety Team
11	**SAUDI ARABIA**	4	4	- Dammam/King Fahad Intl (OEDF) - Jeddah/King Abdulaziz Intl (OEJN) - Riyadh/King Khalid Intl (OERK) - Madinah/Prince Mohammad Bin Abdulaziz Intl (OEMA)
12	**SUDAN**	4	4	- Khartoum/Khartoum (HSSS) - El Obeid/El Obeid (HSOB) - Port Sudan/Port Sudan (HSPN) - Nyala/Nyala (HSNN)
13	**SYRIA**	3		
14	**UNITED ARAB EMIRATES- UAE**	8	8	- Abu Dhabi/Abu -Dhabi Intl (OMAA) - Abu Dhabi/Al Bateen Intl (OMAD) - Dubai/Dubai Intl (OMDB) - Dubai/Al Maktoum Intl (OMDW) - Al Ain/Al Ain Intl (OMAL) - Fujairah/Fujairah Intl (OMFJ) - Ras Al Khaimah/Ras Al Khaimah Intl (OMRK) - Sharjah/Sharjah Intl (OMSJ
15	**YEMEN**	5		
	Total	**59**	**33**	
	Percentage		**56%**	

APPENDIX 3M

List of Actions to support the SEIs

SEI: Improve the status of implementation of State Safety Programme (SSP) and Safety Management System (SMS) in the MID Region	
Actions	**Champion**
Conduct of Safety Management Training Courses, Symposia and Workshops.	ICAO
Establish the MENA RSOO to support States in the expeditious implementation of SSP.	ACAC/ICAO
Improve the status of implementation of SMS at international aerodromes.	Egypt and Saudi Arabia
Improve the status of implementation of SMS by ANSPs (ATM).	CANSO
Improve the status of implementation of SMS by air operators.	IATA
Improve the status of implementation of SMS by maintenance organizations.	IATA and Boeing
Improve the status of implementation of SMS by training organizations (involved in flight training).	ACAC

SEI: Strengthening of States' Safety Oversight capabilities	
Actions	**Champion**
Conduct USOAP CMA Workshops including cost-recovery.	ICAO
Establish the MENA RSOO to assist States to resolve safety oversight deficiencies and carry out tasks and functions in the area of PEL, OPS, AIR, AGA and ANS.	ACAC/ICAO
Organize Government Safety Inspector (GSI) Courses (OPS, AIR, ANS, AGA).	ICAO
Conduct ICAO missions to States to provide assistance related to the preparation of USOAP-CMA activities.	ICAO
Develop and implement a specific NCLB plan of actions for prioritized States according to established criteria.	ICAO/States/Stakeholders

SEI: Improve Regional Cooperation for the provision of Accident & Incident Investigation	
Actions	**Champion**
Improve the draft version of the Strategy for the establishment of a Middle East RAIO, in order to be presented and reviewed during the Workshop.	UAE in coordination with Bahrain, Saudi Arabia, Sudan and the ICAO MID Office
Organize the ACAC/ICAO AIG Workshop.	Saudi Arabia
Finalize the Strategy for the establishment of a Middle East RAIO by the ACAC/ICAO AIG Workshop.	States/ACAC/ICAO/Stakeholders
Final endorsement by RASG-MID and the ACAC Executive Council.	ICAO and ACAC
Organize MENASASI 2017 Seminar in Saudi Arabia.	Saudi Arabia
Organize Training related to AIG.	UAE/Saudi Arabia

SEI: Improve implementation of ELP requirements in the MID Region	
Actions	**Champion**
Develop a questionnaire to be used as the basis of a survey to assess the implementation of ELP requirements.	UAE in coordination with the ICAO MID Office
Disseminate the questionnaire to the MID States.	ICAO
Analyse the survey results and agree on next course of actions.	MID-SST in coordination with the ATM SG

APPENDIX 3N

INTERNATIONAL CIVIL AVIATION ORGANIZATION

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

MID REGION

SAFETY STRATEGY

EDITION 5, SEPTEMBER 2017

TABLE OF CONTENTS

MID Region Safety Strategy

1. Strategic Safety Objective

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

2. Safety Objectives

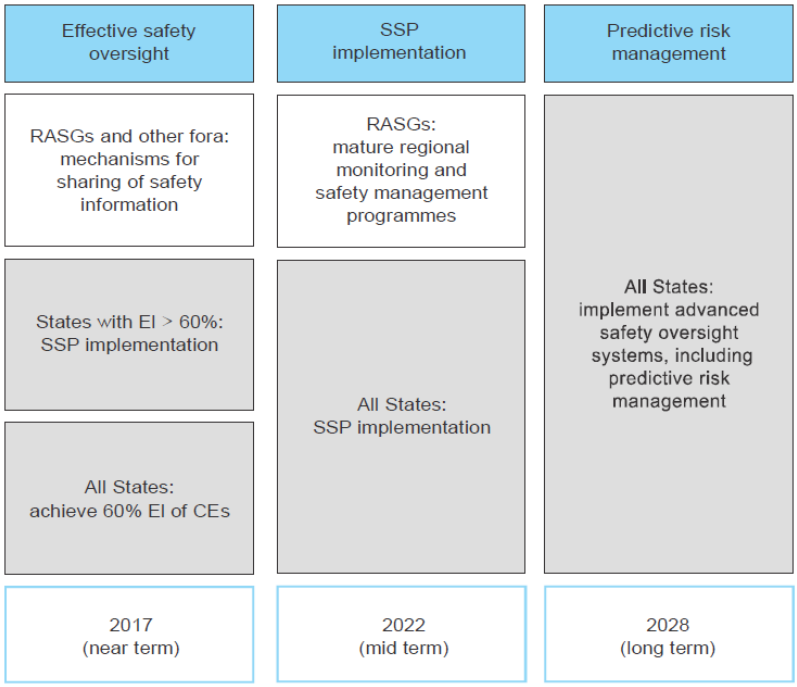
2.1 States and Regions must focus on their safety priorities as they continue to foster expansion of their air transport sectors.

2.2 The ICAO Global Aviation Safety Plan (GASP) establishes targeted safety objectives and initiatives while ensuring the efficient and effective coordination of complementary safety activities between all stakeholders. The 2017-2019 GASP introduce a new global aviation safety roadmap to ensure that safety initiatives deliver the intended benefits of the GASP objectives through enhanced coordination, thus reducing inconsistencies and duplication of efforts.

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

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

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



GASP Objectives

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

3. Measuring and monitoring Safety Performance:

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

3.2 The monitoring of safety performance and its enhancement is achieved through identification of relevant Safety Themes and Indicators as well as the adoption and attainment of Safety Targets.

3.3 The MID Region Safety Indicators and Targets are detailed in the Table below:

	Safety Indicator	Safety Target
Reactive Part	Number of accidents per million departures.	Reduce/Maintain the regional average rate of accidents to be in line with the global average rate by 2016.
	Number of fatal accidents per million departures.	Reduce/Maintain the regional average rate of fatal accidents to be in line with the global average rate by 2016.
	Number of Runway Safety related accidents per million departures.	Reduce/Maintain the regional average rate of Runway Safety related accidents to be below the global average rate by 2016.
		Reduce/Maintain the Runway Safety related accidents to be less than 1 accident per million departures by 2016.
	Number of LOC-I related accidents per million departures.	Reduce/Maintain the regional average rate of LOC-I related accidents to be below the global rate by 2016.
	Number of CFIT related accidents per million departures.	Reduce/Maintain the regional average rate of CFIT related accidents to be below the global rate by 2016.

	Safety Indicator	Safety Target
Proactive Part	USOAP-CMA Effective Implementation (EI) results: a. Regional average EI. b. Number of MIDStates with an overall EI over 60%. c. Number of MIDStates with an EI score less than 60% for more than 2 areas (LEG, ORG, PEL, OPS, AIR, AIG, ANS and AGA).	Progressively increase the USOAP-CMA EI scores/results: a. Increase the regional average EI to be above 70% by 2020. b. 11 MID States to have at least 60% EI by 2020. c. Max 3 MIDStates with an EI score less than 60% for more than 2 areas by 2017.
	Number of Significant Safety Concerns	a. MID States resolve identified Significant Safety Concerns as a matter of urgency and in any case within 12 months from their identification. b. No significant Safety Concern by 2016.
	Use of the IATA Operational Safety Audit (IOSA), to complement safety oversight activities.	a. Maintain at least 60% of eligible MID airlines to be certified IATA-IOSA at all times. b. All MID States with an EI of at least 60% use the IATA Operational Safety Audit (IOSA) to complement their safety oversight activities, by 2018.
	Number of certified International Aerodrome as a percentage of all International Aerodromes in the MID Region.	a. 50% of the International Aerodromes certified by 2015. b. 75% of the International Aerodromes certified by 2017.
	Number of established Runway Safety Team (RST) at MID International Aerodromes.	50% of the International Aerodromes by 2020.
	Percentage of MID States that use ECCAIRS for the reporting of accidents and serious incidents.	a. 60% by 2018 b. 80% by 2020

	Safety Indicator	Safety Target
Predictive Part	Number of MID States, having completed the SSP gap analysis on iSTARS.	10 MID States by 2015.
	Number of MID States, that have developed an SSP implementation plan.	10 MID States by 2015.
	Number of MID States with EI>60%, having completed implementation of SSP Phase 1.	All MID States with EI>60% to complete phase 1 by 2016.
	Number of MID States with EI>60%, having completed implementation of SSP Phase 2.	All MID States with EI>60% to complete phase 2 by 2017.
	Number of MID States with EI>60%, having completed implementation of SSP Phase 3.	All MID States with EI>60% to complete phase 3 by 2018.
	Number of MID States with EI>60%, having completed implementation of SSP.	All MID States with EI>60% to complete SSP implementation by 2020.
	Number of MID States with EI>60% that have established a process for acceptance of individual service providers' SMS.	a. 30% of MID Stateswith EI>60% by 2015. b. 70% of MID Stateswith EI>60% by 2016. c. 100% of MID Stateswith EI>60% by 2017.
	*Average Fleet Age.	States are required to monitor their fleet age. No regional Safety Targets are defined.
	*Percentage of fleet above 20 years of age.	

4. Governance

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

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

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

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APPENDIX 3O

STATUS OF THE MID REGION SAFETY INDICATORS TARGETS

	Safety Indicator	Safety Targets	MID Average Rate 2012-2016	Global Average Rate 2012-2016	MID 2016	Global 2016
Reactive Part	Number of accidents per million departures.	Reduce/Maintain the regional average rate of accidents to be in line with the global average rate by 2016.	**2.76**	**2.76**	**2.3**	**2.1**
	Number of fatal accidents per million departures.	Reduce/Maintain the regional average rate of fatal accidents to be in line with the global average rate by 2016.	**0.64**	**0.26**	**1.54**	**0.26**
	Number of Runway Safety related accidents per million departures.	Reduce/Maintain the regional average rate of Runway Safety related accidents to be below the global average rate by 2016.	**1.39**	**1.48**	**1.54**	**1.23**
		Reduce/Maintain the Runway Safety related accidents to be less than 1 accident per million departures by 2016.	**2**			
	Number of LOC-I related accidents per million departures.	Reduce/Maintain the regional average rate of LOC-I related accidents to be below the global rate by 2016.	**0**	**0.07**	**0**	**0.1**
	Number of CFIT related accidents per million departures.	Reduce/Maintain the regional average rate of CFIT related accidents to be below the global rate by 2016.	**0**	**0.08**	**0**	**0.04**

	Safety Indicator	Safety Target	MID
Proactive Part	USOAP-CMA Effective Implementation (EI) results: a. Regional average EI. b. Number of MID States with an overall EI over 60%. c. Number of MID States with an EI score less than 60% for more than 2 areas (LEG, ORG, PEL, OPS, AIR, AIG, ANS and AGA).	Progressively increase the USOAP-CMA EI scores/results: a. Increase the regional average EI to be above 70% by 2020. b. 11 MID States to have at least 60% EI by 2020. c. Max 3 MID States with an EI score less than 60% for more than 2 areas by 2017.	a. 70.5% b. 10 States c. 7 States
	Number of Significant Safety Concerns.	a. MID States resolve identified Significant Safety Concerns as a matter of urgency and in any case within 12 months from their identification. b. No significant Safety Concern by end of 2016.	None
	Use of the IATA Operational Safety Audit (IOSA), to complement safety oversight activities.	a. Maintain at least 60% of eligible MID airlines to be certified IATA-IOSA by 2015 at all times. b. All MID States with an EI of at least 60% use the IATA Operational Safety Audit (IOSA) to complement their safety oversight activities, by 2018.	a. 57% b. 4 States
	Number of certified international aerodrome as a percentage of all International Aerodromes in the MID Region.	a. 50% of the International Aerodromes certified by 2015. b. 75% of the International Aerodromes certified by 2017.	58%
	Number of established Runway Safety Team (RST) at MID International Aerodromes.	50% of the International Aerodromes by 2020.	56%
	Percentage of MID States that use ECCAIRS for the reporting of accidents and serious incidents.	a. 60% by 2018 b. 80% by 2020	27% already using ECCAIRS 13% Planning to use ECCAIRS in 2017

	Safety Indicator	Safety Target	MID
Predictive Part	Number of MID States, having completed the SSP Gap Analysis on iSTARS.	10 MID States by 2015.	10 States
	Number of MID States that have developed an SSP implementation plan.	10 MID States by 2015.	8 States
	Number of MID States with EI>60%, having completed implementation of SSP Phase 1.	All MID States with EI>60% to complete phase 1 by 2016.	3 States completed implementation of SSP Phase 1. 4 States partially completed implementation of SSP Phase 1.
	Number of MID States with EI>60%, having completed implementation of SSP Phase 2.	All MID States with EI>60% to complete phase 2 by 2017.	1 State completed implementation of SSP Phase 2. 6 States partially completed implementation of SSP Phase 2.
	Number of MID States with EI>60%, having completed implementation of SSP Phase 3.	All MID States with EI>60% to complete phase 3 by 2018.	7 States partially completed implementation of SSP Phase 3.
	Number of MID States with EI>60%, having completed implementation of SSP.	All MID States with EI>60% to complete SSP implementation by 2020.	None
	Number of MID States with EI>60% that have established a process for acceptance of individual service providers' SMS.	a. 30% of MID States with EI>60% by 2015. b. 70% of MID States with EI>60% by 2016. c. 100% of MID States with EI>60% by 2017.	6 States established a process for acceptance of individual service providers' SMS.
	*Average Fleet Age.	States are required to monitor their fleet age. No regional Safety Targets are defined.	N/A
	*Percentage of fleet above 20 years of age.		

APPENDIX 3P

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

1- Background

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

Whereas Assembly Resolution A36-10, inter-alia:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Considering the challenges related to the establishment of a RAIO;

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

2- Objective

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

3- Methodology

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

Level 1:

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

Level 2:

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

Level 3:

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

The Table in **Appendix A** provides more details about each level.

4- Strategic Plan

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

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

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

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

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

APPENDIX A

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

Services of State's National Centers of research, laboratories, institutions, experts, etc. (External to the AIG)	A State can utilize the other State's National Centers	List of MENA States' Centers that can be utilized by any member State. The State conducting the investigation will hold the cost	RAIO-centralized list of Centers. Cost share is determined by RAIO
Investigation regulations	Individual, but a State can benchmark the other State	Harmonized and coordinated by a voluntary State	RAIO-centralized
Oversight of the State investigation authority	Individual, but a State may conduct a peer-review upon the other State request	Pooled peer-review group maintained by a voluntary State	RAIO oversight (either by a RAIO group or by outsourced organization)
Funding of conducting investigations	The State responsible for initiating the investigation holds the cost	The State responsible for initiating the investigation holds the cost	Investigations into certain category of accidents are conducted by RAIO based on published criteria. Cost share is determined by RAIO
Funding of regional investigation organization	-	-	Centralized fund by States' contributions

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APPENDIX 3Q

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

1- Background

A Strategy was developed by the ICAO AIG Workshop that took place in Jeddah, Saudi Arabia, during the period 24-27 April 2017, concerning the enhancement of cooperation in the provisions of AIG functions for the Middle East and North Africa States. The Strategy was further It was found that the earlier Strategy was difficult to be implemented because it required the States to collectively move from a phase to next without sufficient consideration to the variation among States' capabilities.

The new Strategy is based on three Levels. States are required to determine first their current situation and then to take the necessary actions to reach at least Level 2.

2- Objective

The objective of this Roadmap is to set certain key performance indicators (KPIs), within a specified target date, for each Level.

3- Methodology

This Roadmap requires participating States to discuss the achievement progress of each KPI on the due time, and then to determine the possibility of moving to the next action point.

Taking into consideration different levels of compliance with Annex 13 (amendment 15, STD 3.2), MENA States are encouraged to take necessary measures to reach at least Level 2.

The Roadmap breaks down each Level to main action points leading to the fulfillment of the Level. Some of these action points require sequential implementation, but others can be processed in parallel. Participating States are required to discuss, by the means they find suitable, the action point implementation and whether the KPI is achieved or not. The discussion should cover each State's situation and its readiness to move to the next action point.

An AIG Taskforce (AIG TF), which consists of Focal Points designated by the constituent States of the Strategy, is required to follow up and monitor the implementation of the Strategy and keep sufficient records of minutes of meetings, all communication concerning the KPI implementation, and all related decisions.

The AIG TF mandate may continue for running the entire Roadmap and report to the States on the discussion/evaluation target dates. A progress report should be developed by the AIG TF.

4- Key Performance indicators (KPIs)

The table in Appendix B illustrates the action points, KPIs, target dates, and dates of KPI achievement evaluation for each main action point within each Level.

APPENDIX A. COOPERATION LEVELS

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

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

APPENDIX B. RAIO STRATEGY IMPLEMENTATION PLAN

Level		Action point	KPI	Goal	Target date	Date of AIG TF for evaluating the Goal achievement
1 Cooperation among MENA States under the framework of Annex 13 and/ or a standard bilateral MOU to share, on ad-hoc basis, resources, training, information, documentation and capabilities; and strengthen conformity with Annex 13	**1**	Issue a State Letter to the MENA States requesting their desire level of participation and to designate official focal point(s) to be part of the AIG TF.	Ratio of States responding by YES to the States receiving the State Letter	70%	End of January 2018	End of April 2018
	2	States sign mutual bi-lateral agreements	Ratio of States which sign agreements to the States responded to the State Letter mentioned in action point 1	70%	End of December 2018	End of April 2019
	3	States practice the agreements	Surveys of agreements' impact on the cooperation	At least satisfactory results of 80% of the States which entered into agreements	End of June 2019	End of Sept 2019
2 Cooperation among MENA States under the framework of a regional cooperation mechanism (well-defined scope and set of coordinated, organized and harmonized procedures and mechanisms) for the conduct of accidents and serious incidents investigations	**4**	Issue a State Letter and forward it to the MENA States, that had completed Level 1, asking for their willingness to enter into a multilateral agreement	Ratio of States responding by YES to the States receiving the State Letter	90%	End of September 2019	End of October 2019
	5	the AIG TF logging the participating States, developing and managing repository of knowledge, information, equipment, tools, investigators, dataframe, list of national research laboratories and centers, etc.	Repository development	Repository is uploaded with updated information about investigation resources as per the mandate issued to the taskforce	End of February 2020	End of April 2020
	6	Form a taskforce and mandate it for developing joint requirements for aviation safety investigation and submit it for States' review, comments, and then concurrence	Joint requirements development	Joint requirements are developed and concurred by the States	End of September 2020	End of October 2020
	7	Form a cooperation mechanism. Seconded investigators from the participant States can manage the mechanism. The seconded investigators shall have access to published contacts and shall be empowered to manage the resources, receive service requests, process it, and make the necessary communications with the other States for a certain service requested under the cooperation mechanism	Mechanism is formalized	Mechanism is efficient and can support the participant States	End of November 2021	End of December 2021
	8	TF to carry out peer-review on the States at Level 2	Percentage of peer-reviewed States	100% of States are peer-reviewed	End of November 2022	End of December 2022
	9	Issue a State Letter to the MENA States, that are poisoned in Level 2, asking for their willingness to enter into a RAIO	Ratio of States decide to continue to the States receiving the State letter	60% of responding States decide to continue towards full RAIO	End of January 2023	End of February 2023

	10	The AIG TF to evaluate satisfaction with level 2 cooperation depending on the achievement of the KPIs/goals.	Achievement of the Level 2 KPIs/goals.	90% of the Level 2 KPIs/goals	End of April 2023	End of May 2023
The decision on whether to continue towards the establishment of a full MENA RAIO, or to be satisfied with level 2 cooperation depending on the achievement of the KPIs/goals.						
3 Establishment of a RAIO with well-defined mandate, roles and responsibilities, organization (human resources), funding mechanism, etc.; with a centralized decision-making process on RAIO activities	**11**	Formulate a charter for the States who decided to continue towards a full RAIO, and develop the internal management system including decision-making on the methods of staffing, funding, centralizing dataframe, etc.	Charter completion	Charter contains all the centralized functions	End of April 2023	End of June 2023
	12	Organize a Workshop for the participating States to develop the establishment process for the RAIO including timelines for having centralized regulations, board of directors, roles and responsibilities, staff, equipment, information, etc.	Establishment process	Establishment document is developed to contain the structure of RAIO, roles and responsibilities, and the management system	End of September 2023	End of October 2023
	13	High level meeting to agree on the establishment of the RAIO and sign a letter of intent or MOU.	LOI or MOU	Signed LOI or MOU	TBD	TBD
	14	Announce and run the RAIO and evaluate the effectiveness of operation, periodically, based on feedback system	Announcement	Full run of RAIO	TBD	TBD

RASG-MID Feedback Questionnaire

Excellent (1) Very Good (2) Good (3) Fair (4) Poor (5) ***Excel***

States	Bahrain					Egypt					Iran					Iraq					Jordan					
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1
Level of Participation in RASG-MID activities			x						x		x						x					x				
Effective implementation of Safety Action Plans and Mitigation Measures		x					x					x						x				x				
Achievement of Safety Targets within set timelines	x							x				x						x			x					
Streamlining of Efforts and Avoidance of Duplication of Efforts	x					x						x						x				x				
Level of Communication with Stakeholders as per set plans	x					x						x				x					x					
Effectiveness of RASG-MID Publications such as MID Annual Safety Report (MID-ASR) and Safety Advisories (RSAs)	x					x					x						x					x				
Overall Satisfaction of RASG-MID	x					x					x						x				x					
Comments/Suggestions	No comment.					-We recommend in RASG-MID meeting's Invitation Letters to focus on necessity and importance of RASG-MID members and alternates to attend on a regular basis to ensure continuity & follow-up & tracking for all issues raised. - Request from States to assign focal person to be responsible for giving ICAO feedback for all correspondences and coordinate issue within CAA.			- The decisions should have timeline and after finishing timeline, the next meeting					Iraq CAA thanks ICAO MID and Qatar CAA to held RASG-MID/5 and would like to have ICAO MID assistance under ICAO MID NCLB to develop an initial action plan to establish					No comment.					No c

lent (1) Very Good (2) Good (3) Fair (4) Poor (5) Excellent (

States	Kuwait				Oman					Qatar					UAE					CANSO						
	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2
Level of Participation in RASG-MID activities		x				x				x					x						x					
Effective implementation of Safety Action Plans and Mitigation Measures		x				x						x				x					x					x
Achievement of Safety Targets within set timelines		x					x					x			x							x				
Streamlining of Efforts and Avoidance of Duplication of Efforts		x				x						x			x					x						
Level of Communication with Stakeholders as per set plans	x						x					x			x					x						
Effectiveness of RASG-MID Publications such as MID Annual Safety Report (MID-ASR) and Safety Advisories (RSAs)		x				x					x				x						x					
Overall Satisfaction of RASG-MID		x				x				x					x							x				
Comments/Suggestions	comment.				The level of representative from stakeholders such as airlines and aerodromes are not sufficient. Those stakeholders should be encouraged to participate and to be involved in all the meeting and activities of					States should be more involved in the RASG-MID acitivities.					No comment.					Yes, it is very important to achieve the safety targets with a set timelines , but we should make sure of maintaining the results as well RASG-MID Publications are very important, but what after publishing them, how we can make sure that people are making use of them, and if they did, are they satisfied! Still ATM SMS needs to be seriously addressed by RASG-MID the same way Airlines and airports SMS are tackled. Maybe ATM SMS should be tackled by MIDANPIRG since it the body dealing with ATM and ANSPs issues. This is only a thought hope to be considered.					Need more and suppor	

1) Very Good (2) Good (3) Fair (4) Poor (5)

States	IATA			ACI				
	3	**4**	**5**	**1**	**2**	**3**	**4**	**5**
Level of Participation in RASG-MID activities	x						x	
Effective implementation of Safety Action Plans and Mitigation Measures							x	
Achievement of Safety Targets within set timelines	x						x	
Streamlining of Efforts and Avoidance of Duplication of Efforts		x				x		
Level of Communication with Stakeholders as per set plans	x					x		
Effectiveness of RASG-MID Publications such as MID Annual Safety Report (MID-ASR) and Safety Advisories (RSAs)	x					x		
Overall Satisfaction of RASG-MID	x						x	
Comments/Suggestions	contribution t from States .			RASG-MID is perhaps the most important forum where the States and Industry Partner can discuss and work together to improve safety in the region. However the levels of participation and discussion tend to be low. There could be two reasons: the language barrier and the large size of the meeting. To overcome these problems, maybe ICAO should consider: a) Allowing the meeting to be conducted in both Arabic and English and providing translation; and b) When appropriate, splitting the meeting into smaller working groups that are given specific topics to discuss or tasks to complete.					

APPENDIX 3S

2018 RASG-MID Safety Related Events in Middle East Calendar

PART A

RASG-MID EVENTS

Dates	Organizers	Activity	Location	Target Attendance
January 2018				
14-18	ICAO	SMxP Course	Cairo	
February 2018				
4-6	ICAO	AIA WG/3	Cairo	
6-8	ICAO	SST/4 & NCMC	Cairo	
March 2018				
5-8	ICAO	CBT Workshop for ATCO and ATSEP Personnel	Cairo	
April 2018				
23-26	ICAO	APAC/MID Safety Management Symposium	Singapore	
May 2018				
June 2018				
25-27	ICAO	RSC/6	Cairo	
July 2018				
1-18	ICAO	GSI-AIR Course	Cairo	
August 2018				

September 2018				
4-6	ICAO	Wildlife Management Control Workshop	Khartoum	
October 2018				
1-4	ICAO	Fourth MID Region Safety Summit & Safety Management Workshop	Riyadh	
November 2018				
December 2018				

PART B
OTHER EVENTS IN THE REGION

Dates	Organizers	Activity	Location	Target Attendance
January 2018				
February 2018				
March 2018				
April 2018				
May 2018				
June 2018				
July 2018				
August 2018				
September 2018				
October 2018				
November 2018				
December 2018				

APPENDIX 4A

LIST OF RASG-MID MEMBERS/ALTERNATES/ADVISERS

NO	STATE	MEMBER	ALTERNATE	ADVISER(S)
1	**BAHRAIN**	Mr. Salah Mohammed Alhumood Director of Aviation Safety and Security Ministry of Transportation and Telecommunications Tel : +973- 17321153 Mobile : +973 36400424 E-mail: salah.alhumood@mtt.gov.bh		
2	**EGYPT**	Mr. Magdi Kamal El Din Ryad Egyptian Civil Aviation Authority Cairo Airport Road Cairo – Egypt Mobile : +0100 1769608 E-mail: capt.magdyryad.caa@link.net	Mr. Mohamed Abbas Soliman Vice President Security, Airports and ANS Egyptian Civil Aviation Authority Cairo International Airport Road Cairo - EGYPT Fax: +202 22688375 Tel: +202 22677382 Mobile: +2012 20091998 E-mail: md.soliman@gmail.com mohamed.abbas@civilaviation.gov.eg	
3	**IRAN**	Mr. Hadi Mehrjou Director General of Safety Department Fax: +9821 44659366 Tel: +9821 44659366 Mobile:: +98 9122141499 E-mail: h-mehrjou@cao.ir safety@cao.ir	Mr. Mahdi Hedayat Khouzani Head of Safety Data Colleciton Group Fax: +9821 44659366 Tel: +9821 44659366 Mobile: +98 9125454738 E-mail: m-hedayat@cao.ir eccairs@cao.ir	Mr. Mehdi Baratloo Head of Safety Data Analyzing Group Fax: +9821 44659366 Tel: +9821 44659366 Mobile: +98 9123712371 E-mail: m-baratloo@cao.ir safety@cao.ir
4	**IRAQ**			
5	**JORDAN**	Eng. Suha Daher Director of Quality Assurance and Internal Audit/NCMC P.O. Box 7547 Amman 11110 Jordan Fax: +962 6 4874710 Tel: +962 6 4799133 Mobile: +962 79 9598998 E-mail: suha.daher@carc.gov.jo	Dr. Mohammad M. S. Al-Husban Director Airworthiness Standards P.O. Box 7547 Amman 11110 Jordan Fax: +962 6 4874710 Tel: +962 6 4887042 Mobile: +962 79 6214053 E-mail: diraws@carc.gov.jo Mohammad.al-husban@carc.gov.jo	
6	**KUWAIT**	Eng. Shaheen M. Al-Ghanim Aviation Safety Director Aviation Safety Department Directorate General of Civil Aviation Kuwait International Airport P.O. Box 17 Safat 13001 Kuwait State of KUWAIT Tel: +965 9977 9976 Email: sm.alghanim@dgca.gov.kw		

7	**LEBANON**	Mr. Omar R. Kaddouha Director of Flight Safety Directorate General of Civil Aviation Beirut Rafic Hariri Int'l Airport Beirut - LEBANON Fax: +9611 629 106 Tel: +9611 628 185 Mobile: +961 303 2443 Email: okaddouha@beirutairport.gov.lb okaddouha@hotmail.com		
8	**LIBYA**			
9	**OMAN**	Eng. Abdullah Omar AlOjaili Asst. Director General for Safety Public Authority for Civil Aviation Fax: +968 24510824 Tel: +968 24519315 Mobile: +968 99360133 E-mail: A.Alojaily@paca.gov.om	Mr. Nasr Ghalib Al-Busaidy Director Quality Assurance Public Authority for Civil Aviation Tel: +968 24518991 Mobile: +968 99024991 E-mail: nasr@ paca.gov.om	
10	**QATAR**			
11	**SAUDI ARABIA**		Mr. Abdulrahman Seddiq Manager, Safety Program General Authority of Civil Aviation P.O. Box 887, Jeddah 21421, Kingdom of Saudi Arabia Fax: +966 12 685 5507 Tel: +966 12 6855387 Mobile: +966 546597864 Email: akseddiq@gaca.gov.sa	Mr. Yassir Almayoof GM Aerodrome & Aerospace General Authority of Civil Aviation P.O. Box 887, Jeddah 21421 Kingdom of Saudi Arabia Fax: + 966 12 685 5507 Tel: + 966 12 685 5255 Mobile: + 966 505 621 582 Email: malalawi@gaca.gov.sa
12	**SUDAN**	Mr. Yahia Hassan Elhoda, Director of Aviation Safety Department Sudan Civil Aviation Authority (SCAA) Fax: +2491 83527422, Mobile: +249912912467 E-mail: yahia@scaa.gov.sd yelheday7@gmail.com	Mr. Abdelgafor Awad Abdelsaddig, Section Head, Safety Policies and Standards Directorate Sudan Civil Aviation Authority (SCAA) Fax: +2491 83527422 Mobile: +249912273884 E-mail: gafor@scaa.gov.sd gafors@gmail.com	
13	**SYRIA**			

14	**UAE**	Mr. Ismaeil Mohammed Al Blooshi Executive Director Aviation Safety Affairs Sector General Civil Aviation Authority P. O. Box 30500 Dubai - United Arab Emirates Fax: +971 4 2820847 Tel: +971 4 2111702 Mobile: +971-506677138 E-mail: iblooshi@gcaa.gov.ae	Mr. Mohammad Faisal Al Dossari Director Air Navigation & Aerodromes Department Aviation Safety Affairs General Civil Aviation Authority P.O. Box 6558 Abu Dhabi, UNITED ARAB EMIRATES Fax: +971 2405 4406 Tel: +971 2405 4395 Mobile: +971 555594943 E-mail: aldossari@gcaa.gov.ae	
15				

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NO	PARTNER	REPRESENTATIVE	ALTERNATE
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5	**BOEING**		Mr. Gerardo Hueto Chief Engineer Aviation System Safety Tel: +1.425.306.4513 E-mail: gerardo.m.hueto@boeing.com
6	**CANSO**	Ms. Hanan Qabartai Director ME Affairs CANSO Amman - JORDAN Tel: +962 650 07321 Mobile: +962 796 768012 Email: hanan.qabartai@canso.org	

NO	PARTNER	REPRESENTATIVE	ALTERNATE
7	**COSCAP-GS**	Mrs. Nadia Konzali Project Coordinator Airworthiness Expert COSCAP-GS-ICAO-TCB GCAA P.O. Box No. 6558 Abu Dhabi – UAE Tel: +971 2 4054267 Mobile : +971 50 3281510 E-mail : nadia.konzali@coscap-icao.org	
8	**EASA**	Mr. Juan de Mata Morales Lopez International Cooperation Officer E-mail: juan-de-mata.morales-lopez@easa.europa.eu	
9	**FAA-UAE**	Mr. Robert Roxbrough Senior Representative, Middle East Federal Aviation Administration (FAA) US Embassy – Unit 6010, Box 0101DPO AE 09825 Abu Dhabi UAE Tel: +971 2 4142438 E-mail: robert.roxbrough@faa.gov	
10	**FSF**	Capt. Kevin Hiatt president and CEO E-mail: hiatt@flightsafety.org	
11	**IATA**	Mrs. Rose Al Osta Manager, Safety & Flight Operations Africa & Middle East International Air Transport Association (IATA) King Abdallah II St., Al Shaab Roundabout P.O. Box 940587 Amman 11194 - JORDAN Tel: +962 6 5804200 Ext 1405 Mobile: +962 79 6668978 E-mail: alostar@iata.org	
12	**IFALPA**	Capt. Souhaiel DALLEL IFALPA Executice Vice President AFRICA & MIDDLE EAST Mobile: +216 98 32 07 71 E-mail: souhaiel.dallel@topnet.tn	Capt. Rola Hoteit Regional Vice President Middle East Tel: +961 1811899 Mobile: +9613707320 E-mail: farolk@hotmail.com
13	**IFATCA**	Mr. Alexis Brathwaite President and Chief Executive Officer IFATCA Tel: +1 868 620 5969 +44 792 442 3472 E-mail: pcx@ifatca.org brathwaite.alexis@gmail.com	
14	**WFP (UN)**	Capt. Samir Sajet Regional Aviation Safety Officer, UAE United Nations World Food Programme Fax: + 971 6 5574796 (Sharjah) Tel: + 971 6 5574799 (Sharjah) Mobile: + 971 50 6561019 E-mail: samir.sajet@wfp.org	

APPENDIX 4B

LIST OF DESIGNATED MID-ASRT FOCAL POINTS

States/Organization	Focal Points Names & Titles	Focal Points Contacts	Remarks
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Jordan			
Kuwait			
Lebanon			

Libya			
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Sudan			
Syria			

UAE	Mr. Walid Ibrahim Al Rahmani Acting Director Safety Policy, Regulation and Planning Dubai - United Arab Emirates	Fax: +971 4 2820847 Tel: +971 4 2111580 Email: wrahmani@gcaa.gov.ae	
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LIST OF DESIGNATED MID-RAST FOCAL POINTS

States/Organization	Focal Points Names & Titles	Focal Points Contacts	Remarks
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Egypt			
Iran	Mr. Mohammad Shahbazai Director General of Safety & AIG Department	Fax: +9821 66018659 Tel: +9821 66073526 Mobile: +98 9124369921 E-mail: m-shahbazi@cao.ir safety@cao.ir	
	Mr. Mahmoodreza Rohani Head of Safety Group and SAFA National Coordinator	Fax: +9821 66018659 Tel: +9821 66073526 Mobile: +98 9128027728 E-mail: m-rohani@cao.ir safety@cao.ir	
Iraq			
Jordan			
Kuwait			
Lebanon			

Libya			
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Qatar			
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APPENDIX 5A

Coordination between MIDANPIRG and RASG-MID

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

Subjects of interest for MIDANPIRG and RASG-MID	Responsible/Leading Group	
	RASG-MID	**MIDANPIRG**
Laser attack	X	
Fatigue Risk Management	X	
RPAS		X
~~GPS Jamming~~ (GNSS vulnerability)		X
~~Aeromedical~~	~~X~~	
Airborne Collision Avoidance System (ACAS)		X

APPENDIX 5B

RASG-MID SAFETY ADVISORY – 4 (RSA-04)

Revision 1- September 2017

GUIDANCE MATERIAL RELATED TO CALL SIGN SIMILARITY

Date of Issue:	May 2015
Revision	No. 1 dated September 2017
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Owner:	RASG-MID

Disclaimer

This document has been compiled by the MID Region civil aviation stakeholders to mitigate the risk associated with Call Sign Confusion. It is not intended to supersede or replace existing materials produced by the National Regulator or in ICAO SARPs. The distribution or publication of this document does not prejudice the National Regulator's ability to enforce existing National regulations. To the extent of any inconsistency between this document and the National/International regulations, standards, recommendations or advisory publications, the content of the National/International regulations, standards, recommendations and advisory publications shall prevail**.**

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GUIDANCE MATERIAL RELATED TO CALL SIGN SIMILARITY

INTRODUCTION

Call sign similarity and confusion has been identified as a safety issue by the Second Meeting of the Middle East Regional Aviation Safety Group (RASG-MID/2) (Abu Dhabi, UAE, 12 – 14 November 2012).

The MIDANPIRG Steering Committee (MSG/4) recognized the urgency of implementing mitigation measures for the call sign similarity and confusion and agreed to establish a Call Sign Confusion ad-hoc Working Group (CSC WG) to develop solutions to mitigate the risk associated with call sign confusion. The CSC WG developed Draft Safety Enhancement Initiative (SEI) and Detailed Implementation Plans (DIPs) related to call sign similarity/confusion of which DIP 4 item 2 calls for the development of call sign similarity rules and guidance material.

The purpose of this Safety Advisory is to develop a clear set of guidelines and call sign similarity rules for Aircraft Operators (AOs) and Air Traffic Controllers (ATC) that could reduce the probability of call sign similarity/confusion occurrence.

DESCRIPTION

An aircraft call sign is a group of alphanumeric characters used to identify an aircraft in air-ground communications. The rules governing the use of aircraft call signs are laid down in ICAO Annex 10: Aeronautical Communications, Volume II - Communication Procedures, Chapter 5. Relevant paragraphs are summarized below.

Three different types of aircraft call sign may be encountered (see table below), as follows:

Type (a) The characters corresponding to the registration marking of the aircraft (e.g. ABCDE). The name of the aircraft manufacturer or model may be used as a prefix (e.g. Airbus ABCDE);

Type (b) The telephony designator of the aircraft operating agency, followed by the last four characters of the registration marking of the aircraft (e.g. Rushair BCDE);

Type (c) The telephony designator of the aircraft operating agency, followed by the flight identification (e.g. Rushair 1234).

Examples of Full Call Signs and Abbreviated Call Signs				
	Type (a)		Type (b)	Type (c)
Full Call Sign	ABCDE	Airbus ABCDE	Rushair BCDE	Rushair 1234
Abbreviated Call Sign	ADE or ACDE	Airbus DE or Airbus ABDE	Rushair DE or Rushair BDE	No abbreviated form

The full call sign must be used when establishing communications. After satisfactory communication has been established, abbreviated call signs may be used provided that no confusion is

likely to arise; however, **an aircraft must use its full call sign until the abbreviated call sign has been used by the ground station**.

Most airline call signs belong to type (c) for which there is no abbreviation. An aircraft is not permitted to change its call sign during flight, **except** temporarily on the instruction of an air traffic control unit in the interests of safety.

In order to avoid any possible confusion, when issuing ATC clearances and reading back such clearances, controllers and pilots must always add the call sign of the aircraft to which the clearance applies.

The use of similar call signs by aircraft operating in the same area and especially on the same RTF frequency often gives rise to potential and actual flight safety incidents. This hazard is usually referred to as "call sign confusion".

ICAO DOC4444 CHANGE OF RADIOTELEPHONY CALL SIGN FOR AIRCRAFT:

An ATC unit may instruct an aircraft to change its type of RTF call sign, in the interests of safety, when similarity between two or more aircraft RTF call signs are such that confusion is likely to occur.

Any such change to the type of call sign shall be temporary and shall be applicable only within the airspace(s) where the confusion is likely to occur.

To avoid confusion, the ATC unit should, if appropriate, identify the aircraft which will be instructed to change its call sign by referring to its position and/or level.

When an ATC unit changes the type of call sign of an aircraft, that unit shall ensure that the aircraft reverts to the call sign indicated by the flight plan when the aircraft is transferred to another ATC unit, except when the call sign change has been coordinated between the two ATC units concerned.

The appropriate ATC unit shall advise the aircraft concerned when it is to revert to the call sign indicated by the flight plan.

The following are some examples of the more common causes for call sign confusion:

- Airlines allocate commercial flight numbers as call-signs; these are normally consecutive and therefore similar (e.g. RUSHAIR 1431, RUSHAIR 1432, etc.)
- Airlines schedule flights with similar call signs to be in the same airspace at the same time.
- Call signs coincidentally contain the same alphanumeric characters in a different order (e.g. AB1234 and BA 2314).
- Call signs contain repeated digits (e.g. RUSHAIR 555).

RECOMMENDED SOLUTIONS

- Many larger airlines operate call sign de-confliction programmes. These involve reviewing company call signs to ensure that aircraft with similar call signs are not likely to be routinely in the same airspace at the same time, and a process to systematically resolve ongoing issues arising from reports of similar call signs from their flight crew, ANSPs or other operators
- Airline Operators with high flight densities in particular airspace should consider routinely using a combination of numeric and alphanumeric call sign formats.
- Airline Operators should observe the following guidance in selecting call signs:

- Avoid the use of similar call signs within the company;
- Where practicable, proactively co-ordinate with other operators to minimize similar numeric and alphanumeric elements of call signs;
- Avoid call signs with a four-number sequence; all-numeric call signs should be limited to a maximum of three digits;
- Do not use the same digit repeated more than once (e.g. RUSHAIR 555);
- If letter suffixes are to be used with a preceding number sequence, limit the full string to a maximum of four alphanumeric components and, to the extent possible, coordinate letter combinations with other airspace and airport users;
- Do not use alphanumeric call signs which have their last two letters as the destination's ICAO location indicator (e.g. RUSHAIR 25LL for a flight inbound to London Heathrow);
- If similarly-numbered call signs are unavoidable within a company, allow a significant time (at least 3 hours at any shared-use vicinity) and/or geographical split between aircraft using them;
- Do not use similar/reversed digits/letters in alphanumeric call-signs (e.g. RUSHAIR 87MB and RUSHAIR 78BM).
- For short haul flights, avoid using number sequences for particular routes which begin the day with.01 and then continue sequentially through the day.

CALL SIGN SIMILARITY 'RULES'

Agreement on and publication of 'Similarity' is a relative term and means different things to different people. The CSC WG/1 recommended the use of the call sign similarity rules of EUROCONTROL; this was later endorsed by the RASG-MID/4 meeting. The following table provides details on the similarity rules adopted by the MID Region.

MID Region Call Sign Similarity Rules

Based on the EUROCONTROL - OPS NM18.5 (currently 21 rules implemented in the EUROCONTROL Call Sign Similarity Tool (CSST) OPS as Global recommended rules).

The following similarity rules are recommended by the CSS User Group. The order within the following table is significant with the most critical rules at the top

APPENDIX 5B
General Similarity Rules

(Applicable to flights within a single AO schedule, i.e. AO ICAO designator remains the same)

Legend

Acceptable Format
Single AO Similarity Rule
Single Call Sign Similarity Rule

Name	Individual Rule Description	Special considerations for this rule	Examples		Rule ID
			Not acceptable	**Acceptable**	
C/S Format	Call Signs need to comply with the allowed formats (see ICAO Doc.4444 Field 7 (a), Aircraft Identification). Normal format: 3 letter ICAO AO designator followed by 1 to 4 alphanumeric characters (Flight Id).	The CSSUG have agreed that the following formats for the Flight Id should be adhered to: Pure numeric: n, nn, nnn, nnnn 1-final letter: nA, nnA, nnnA 2-final letters: nAA, nnAA	ABC 4B63, ABC F27	ABC 1, ABC 1234, ABC 23T, ABC 34TD	*ZG00*
Identical Final Digits	Checks for 2 identical final digits in the Flight Ids		ABC 234 vs ABC 534		*AG62*
Identical Bigrams	Checks for blocks of contiguous characters which form a bigram.		ABC 224 KF vs ABC 36 KF ABC 36 KF vs ABC 528 KF		*AG67*
Letters To Avoid	Some single letters may be easily confused with digits and are therefore best avoided.	Single letters, eg. “O” vs “0”, “I” vs “1”	ABC 841I, ABC 460O		*ZG08*
Anagrams	Checks for anagrams occurring within the Flight Ids		ABC 1368 vs ABC 1386 vs ABC 1638 vs ABC 1683 vs ABC 1836 vs ABD 1863 etc.		*AG63*
Identical Block Digits	Checks for Calls Signs which form blocks of contiguous identical characters which are: • the same length, or • 2 versus. 3 characters, or • 3 versus. 4 characters		ABC 52 vs ABC 352 vs ABC 524 vs ABC 52L		*AG64*

Parallel Characters	Checks if characters composing the Call Signs form parallel alignment of identical characters.		ABC 41 vs ABC 401 vs ABC 4351		*AG65*
Identical Digit Roots	Checks for prefix blocks (roots) of identical digits.		ABC 57 vs ABC 573 vs ABC 5746		*AG66*
Identical Final Letter	Checks for Call Signs with identical final letter.		ABC 23L vs ABC 257L ABC 54L vs ABC 637L		*AG68*

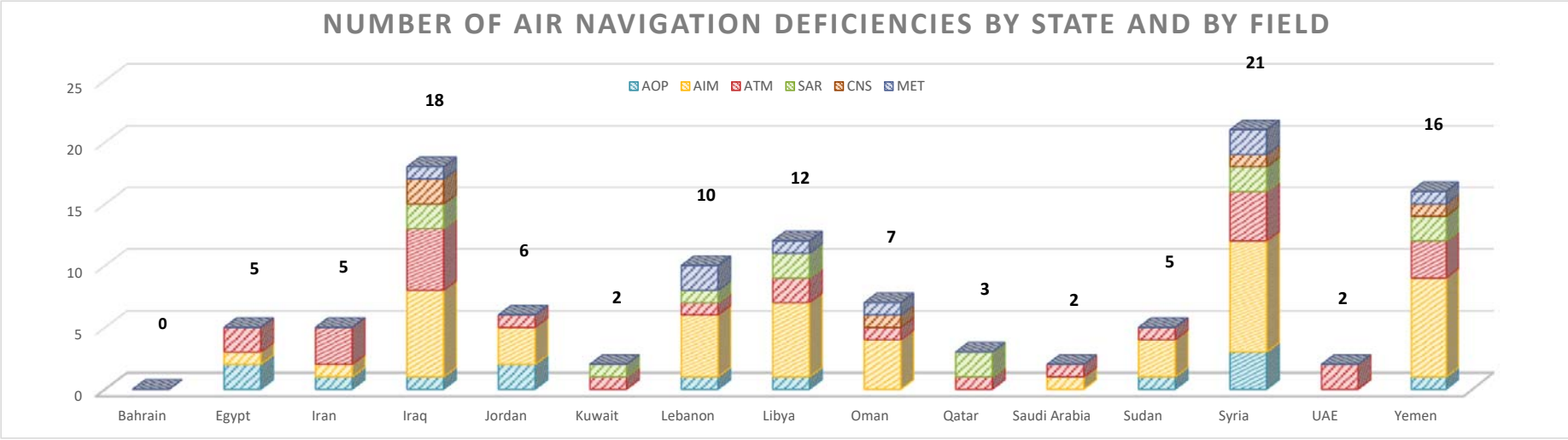
1

Triple Repetition	A specific form of similarity where 3 digits are repeated within a Flight Id	With 3 repeated digits there is a risk of dropping one of the digits, which could cause confusion with a different Flight Id.	ABC 111, ABC 444		*ZG09*
Flight Level Values	A specific form of similarity where the Flight Id is equal to the digits used in a flight level communication.	ICAO Doc 8585 recommends that, wherever, practicable 0 and 5 should not be used as the final figure in ATC Call signs. Values 040, 050, ...390, 400, 410 may cause confusion with Flight levels, but this only applies to the format nnn	ABC 330, ABC 095	ABC 1320, ABC 50	*ZG01*
Any Runway Values	A specific form of similarity where a Flight Id is equal to the runway identifiers.	Combinations of numbers ranging from 01-36 (two digits only) followed by the letters L and R should be avoided. Only applicable to the format nn or nnA. Avoidance of the actual runway designators at departure and destination aerodromes is recommended.	ABC 36L, ABC 15, ABC 16R		*ZG03*

APPENDIX 5C

Flight	Date	Area	Flight	ACFT	Duration	Remark
AF6752	28/11/15	CAI FIR	Landing 05C	B777		from 1000ft to gnd
AF508	06/12/15	CAI FIR	Landing 05C	A330		
AF166	19/12/15	Baku UIR WPT SUBUT	FL330	B777	6min	on AWY T923 ANP increased to 2,7
AF226	21/12/15	Baku FIR	FL330	B777		
AF166	22/12/15	Caspian sea	Cruise level	B777	30+min	
AF254	22/12/15	Baku FIR	Cruise level	B777	20min	
AF503	17/12/15	CAI FIR	Take off 23C	A340		Nav fm/gps pos disagree, gps 2 fault until FL70
AF259	28/12/15	Azerbaijanarea /Caspian sea	Cruise level	B777	15min	Loss of GPS (pos ref) with ANP increasing
AF503	04/01/16	CAI FIR	Take off 23C	A330	20min	GPS1 loss on RWY axis, GPS2 lost and recovered w/o action
AF166	13/02/16	Tbilissi area	Cruise level	B777	5min	both gps loss, NAV unable RNP, GPS, RWY POS.
AF166	25/02/16	Tbilissi area	Cruise level	B777		TERR POS, NAV UNABLE RNP, loss of both GPS. GPS2 never recovered from event…
AF503	08/03/16	CAI FIR	Take off 23C	A330	2min	loss of GPS1
AF508	31/03/16	CAI FIR	Landing 05C	A330		By 2000ft loss of GPS1, with NAV FMS POS, GPS pos disagree
AF508	06/06/16	CAI FIR	Landing 05C	A330		tempo loss of GPS1 btn 6,5 IZFC dme/6,2 and 3,9/3,4
AF508	07/07/16	CAI FIR	Landing 05C	A330		GPS pos disagree
AF508	17/08/16	CAI FIR	Landing	A330		Both GPS lost on final btn 1000' and 500'.
AF218	05/09/16	Ankara FIR	Cruise level	A330	10min	Loss of GPS1 then GPS2
AF508	05/07/15	CAI FIR	APP/Landing	A330		During approach to HECA ,many intermittent alarms: NAV FM/GPS disgree on ECAM
	20/08/2015	Doha Airport	climb 1000-10000 ft	B773	30 Sec	Passing 1000ft on ALSEMIM departure ,GPS update lost.INERTIAL displayed .ANP increased to approx.2.5 EICAS"NAV UNABLE" .GPS update returned afetr 30 Sec.Occured once more on climb at 10000ft .GPS update returned afetr few seconds
FZ002	29/08/2015	Doha Airport	Climb	B 737 A6-FDN	7min	Outbound from DOH, we lost both GPS L and GPS R passing 2000ft climbing. Returned at approx 60nm from DOH at FL210. Max ANP seen 0.17
FZ018	28/08/2015	Doha Airport	Climb GND-7000ft	B737 /A6-FDZ	6 min	Shortly after departure from RWY34R from DOH we lost both GPS L/R. After passing 7000ft we got back one GPS. Both GPS was intermittent ON and OFF until passing 50nm out from DOH. Afterwards it was normal.
EK847	29/12/2015	Doha Airport	Approach	B77L		On ILS 34L, EICAS Runway POS ND showed inertial position temporary – then GPS showed again EICAS cleared
EK848	23/01/2016	Doha Airport	Climb 1500-15000 ft	B773		GPS position lost on departure from 1.500ft – 15.000ft between 'turning right' DCT to ALSEM
BA 198	10/06/16	Tehran FIR	30NM EAST OF DASIS UL333	B777 G-YMMH		About 30nm prior to DASIS westbound in Tehran FIR we lost GPS reception from both sensors, we checked with the aircraft around us and the four of them confirmed similar situation, we guessed therefore that there had been some Jamming of the GPS signal in the area. The signal returned some 40nm after DASIS.
BA 109	22/10/2016	Tehran FIR	Cruise level	B777 G-VIIL	2 min	Approximately 200nm from position Alram (Ankara/ Tehran FIR boundary) GPS indication on Nav display briefly Blanked and was replaced by INERTIAL. Shortly after crossing boundary, a repeat event occured, this time lasting for approximately two minutes
QR 8132	28/11/2106	Tehran FIR	Cruise level 350 ft	B772 A7-BFC	4 min	In cruise FL 350, 30 NM North-West position ENEDA (Tehran FIR) on Airway UT-36 total loss of GPS signal for approximately 4 minutes (04:14UTC) Self recovered South- East ENEDA.

APPENDIX 5D



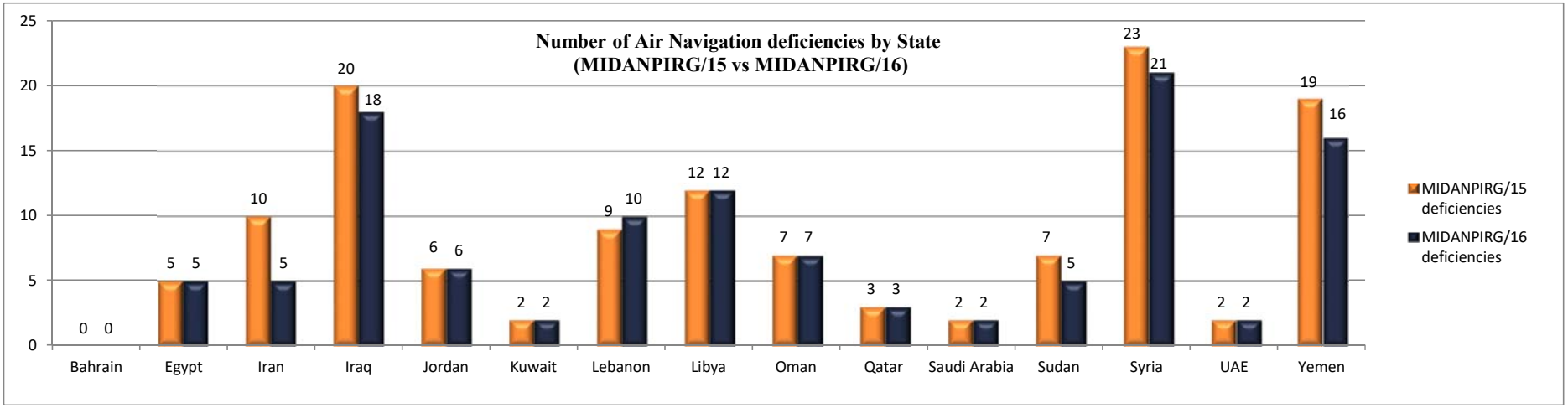
Deficiencies approved by MIDANPIRG/16

	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen	Total
AOP	0	2	1	1	2	0	1	1	0	0	0	1	3	0	1	**13**
AIM	0	1	1	7	3	0	5	6	4	0	1	3	9	0	8	**48**
ATM	0	2	3	5	1	1	1	2	1	1	1	1	4	2	3	**28**
SAR	0	0	0	2	0	1	1	2	0	2	0	0	2	0	2	**12**
CNS	0	0	0	2	0	0	0	0	1	0	0	0	1	0	1	**5**
MET	0	0	0	1	0	0	2	1	1	0	0	0	2	0	1	**8**
TOTAL	**0**	**5**	**5**	**18**	**6**	**2**	**10**	**12**	**7**	**3**	**2**	**5**	**21**	**2**	**16**	**114**

Deficiencies approved by MIDANPIRG/15

	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen	Total
AOP	0	2	1	1	2	0	1	1	0	0	0	1	3	0	1	**13**
AIS/MAP	0	1	2	8	3	0	5	6	4	0	1	5	10	0	8	**53**
ATM	0	2	4	5	1	1	2	2	1	1	1	1	4	2	3	**30**
SAR	0	0	0	2	0	1	1	2	0	2	0	0	2	0	2	**12**
CNS	0	0	1	3	0	0	0	0	1	0	0	0	1	0	4	**10**
MET	0	0	2	1	0	0	0	1	1	0	0	0	3	0	1	**9**
TOTAL	**0**	**5**	**10**	**20**	**6**	**2**	**9**	**12**	**7**	**3**	**2**	**7**	**23**	**2**	**19**	**127**

	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen	Total
MIDANPIRG/15 deficiencies	**0**	**5**	**10**	**20**	**6**	**2**	**9**	**12**	**7**	**3**	**2**	**7**	**23**	**2**	**19**	**127**
MIDANPIRG/16 deficiencies	**0**	**5**	**5**	**18**	**6**	**2**	**10**	**12**	**7**	**3**	**2**	**5**	**21**	**2**	**16**	**114**

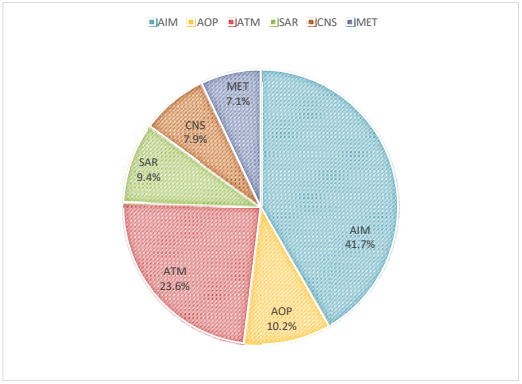


AIR NAVIGATION DEFICIENCIES IN THE THE MID REGION

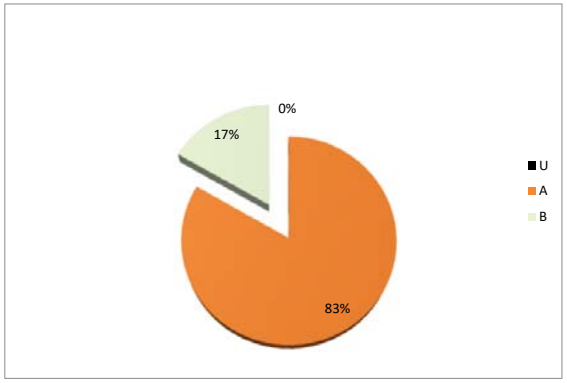
STATE	AIM							Total AIM	AOP							Total AOP	ATM							Total ATM	SAR							Total SAR	CNS							Total CNS	MET							Total MET
	Priority			Rational					Priority			Rational					Priority			Rational					Priority			Rational					Priority			Rational					Priority			Rational				
	U	A	B	F	H	S	O		U	A	B	F	H	S	O		U	A	B	F	H	S	O		U	A	B	F	H	S	O		U	A	B	F	H	S	O		U	A	B	F	H	S	O	
Bahrain								0								0								0								0								0								0
Egypt		1					1	1		2		2	1		1	2			2			2		2								0								0								0
Iran		1					1	1		1		1	1			1		1	2			1	2	3								0								0								0
Iraq		6	1	5	5	1	6	7		1		1	1		1	1		1	4			4	1	5		2					2	2		2				2	2		1				1	1
Jordan		2	1	3	3			3		1	1	2	1			2		1			1			1								0								0								0
Kuwait								0								0		1				1		1		1					1	1							0								0
Lebanon		4	1		3		2	5		1		1	1			1		1				1		1		1					1	1							0		2					2	2
Libya		5	1				6	6		1		1	1	1		1		2			1	1	2	2		2			2	2	2	2							0		1					1	1
Oman		4					4	4								0		1				1		1								0			1				1	1		1				1	1
Qatar								0								0		1				1		1		2					2	2							0								0
Saudi Arabia		1					1	1								0		1				1		1								0								0								0
Sudan		3					3	3		1		1	1			1		1			1	1	1	1								0								0								0
Syria		8	1	6	7	1	2	9		3		3	3			3		2	2		2	2	1	4		2					2	2		1				1	1		2				2	2
UAE								0								0		1	1			1	1	2								0								0								0
Yemen		7	1	4	2		4	8		1		1	1			1		3			3		2	3		2					2	2		1				1	1		1				1	1
Total	0	42	6	18	20	2	30	48	0	12	1	13	11	1	2	13	0	17	11	0	8	17	12	28	0	12	0	0	2	2	12	12	0	4	1	0	0	0	5	5	0	8	0	0	0	0	8	8

TOTAL DEFICIENCIES:114

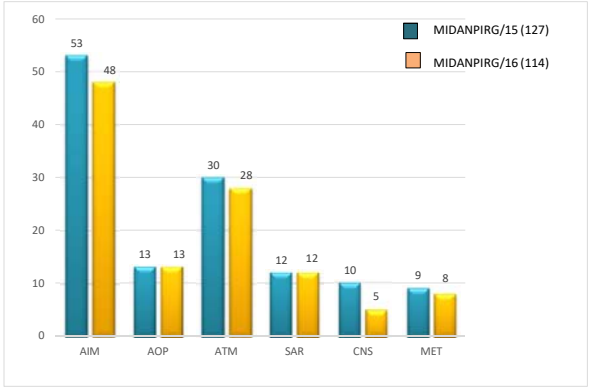
Distribution of Air Navigation deficiencies by field



Distribution of Air navigation deficiencies by priority



Deficiencies by field (MIDANPIRG/16 vs MIDANPIRG/15)



ATTACHMENT A

LIST OF PARTICIPANTS

NAME	TITLE & ADDRESS
STATES **BAHRAIN**	
Mr. Abdul Razzaq Abdulwahid Abdulla	Aircraft Registration Specialist KINGDOM OF BAHRAIN
Mr. Abdulla Al Qadhi	Chief AIM & Airspace Planning KINGDOM OF BAHRAIN
Capt. Abdullah Mahmoud Al Saeedi	Flight Operation Inspector KINGDOM OF BAHRAIN
Mr. Abdullatif Bucheeri	ATMD Safety Manager KINGDOM OF BAHRAIN
Mr. Ahmed Mohamed Bucheery	Head Air Traffic Operation KINGDOM OF BAHRAIN
Mr. Adel Ebrahim Al-Hadi	Head of Aviation Security – AVSEC PM KINGDOM OF BAHRAIN
Mr. Alaaldin K. Showaiter	Chief Aviation Safety Rules & Regulations KINGDOM OF BAHRAIN
Mr. Anwar Yusuf Al Mulla	Operation Supervisor - Bahrain/MET KINGDOM OF BAHRAIN
Mr. Arvind Mohan	Airworthiness Inspector KINGDOM OF BAHRAIN
Mr. Dheya Ali AlAlawi	Chief of Meteorological Operations KINGDOM OF BAHRAIN
Mr. Fareed Mohamed Alabbasi	Tower Head Air Traffic Operations KINGDOM OF BAHRAIN
Mr. Farid Usman Malek	Head Aerodrome Safety KINGDOM OF BAHRAIN
Mr. Fuad Farooq	A/Manager Airside Operations KINGDOM OF BAHRAIN
Capt Hafed Y. Al Binfalah	Manager Flight Safety & Human Factor Safety Services KINGDOM OF BAHRAIN
Mr. Khalid Hussain Yaseen	Meteorological Operation Supervisor KINGDOM OF BAHRAIN

NAME	TITLE & ADDRESS
Capt. Khalil Ebrahim Radhi	Senior Manager Safety Services KINGDOM OF BAHRAIN
Mrs. Leena Ahmed Al-Kooheji	Senior Air Navigation Audit Specialist KINGDOM OF BAHRAIN
Mr. Max Rahman	Manager Aviation SMS/SERCO KINGDOM OF BAHRAIN
Mr. Mohammed Yusif Bumtaia	Head Airspace Planning KINGDOM OF BAHRAIN
Mr. Muhana Abdulla Muhana Buhamood	Airworthiness Inspector KINGDOM OF BAHRAIN
Mr. Paul Kelly	Safety Advisor KINGDOM OF BAHRAIN
Mr. Rashed Saleh Aljoben	Acting Chief of Standard and Licensing Department KINGDOM OF BAHRAIN
Mr. Richard Lambo	Aviation Safety Specialist KINGDOM OF BAHRAIN
Mr. Salah Mohammed Al-Humood	Director, Aviation Safety and Security KINGDOM OF BAHRAIN
Mr. Srinivasa Rao. G	Manager Safety & Audits KINGDOM OF BAHRAIN
Mr. Sunil Kumar	Senior Aerodrome Safety Standard Specialist KINGDOM OF BAHRAIN
EGYPT Mr. Magdy Kamal El Din Ryad	Safety General Manager Egyptian Civil Aviation Authority Cairo - Egypt
IRAQ Mr. Fadel Gatea	Director ATS Iraqi Civil Aviation Authority Baghdad - IRAQ
Mr. Riad Chehayeb	Consultant Iraqi Civil Aviation Authority Baghdad - IRAQ
Mr. Tariq Rasool	ATS Manager of Quality Assurance Iraqi Civil Aviation Authority Baghdad - IRAQ

NAME	TITLE & ADDRESS
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Eng. Suha Daher	Quality Assurance and Internal Audit Director Jordan Civil Aviation Regulatory Commission Amman - JORDAN
KUWAIT Mr. Adel Saoud Boresli	Director of Air Navigation Department Directorate General of Civil Aviation State of KUWAIT
Eng. Shaheen M. Al-Ghanim	Aviation Safety Director Directorate General of Civil Aviation State of KUWAIT
OMAN Eng. Abdullah Omar Al Ojaili.	Asst. Director General for Safety Public Authority for Civil Aviation SULTANATE OF OMAN.
SAUDI ARABIA Mr. Abdulelah O. Felemban	Director General Aviation Investigation Bureau KINGDOM OF SAUDI ARABIA
Mr. Abdulrahman D. Aljuhani	Director General Office Manager Aviation Investigation Bureau, KSA KINGDOM OF SAUDI ARABIA
Mr. Badr A. Alharbi	Risk Management Manager General Authority of Civil Aviation KINGDOM OF SAUDI ARABIA
Mr. Yaser Alqahtani	Risk Specialist General Authority of Civil Aviation KINGDOM OF SAUDI ARABIA
Mr. Abdulrahman K. Seddiq	Aviation Safety Specialist General Authority of Civil Aviation KINGDOM OF SAUDI ARABIA
SUDAN Mr. Fakhr Eldin Osman Ahmed Mehadi	Aerodromes Safety & Standards Directorate Director Sudan Civil Aviation Authority Khartoum - SUDAN

NAME	TITLE & ADDRESS
Mr. Yahia Hassan Elhoda Mohamed	Director of Aviation Safety Department Sudan Civil Aviation Authority Khartoum - SUDAN
TURKEY Mr. Haydar Yalgin	Deputy Director General (Vice Chairman ICAO RASG-EUR) Directorate General of Civil Aviation TURKEY
UNITED ARAB EMIRATES Mr. Ahmed Al Jallaf	Executive Director Air Navigation Services General Civil Aviation Authority Abu Dhabi - UNITED ARAB EMIRATES
Mr. Ismaeil Mohammed Al Blooshi	Assistant Director General, Aviation Safety Affairs Sector General Civil Aviation Authority UNITED ARAB EMIRATES
Mr. Khalid Walid Al Raisi	Director Air Accident Investigation General Civil Aviation Authority Abu Dhabi- UNITED ARAB EMIRATES
Mr. Mohammad Faisal Al Dossari	Director Air Navigation and Aerodromes Department General Civil Aviation Authority Abu Dhabi, UNITED ARAB EMIRATES
Mr. Mourad Ben Asker	Manager Policy & Regulation General Civil Aviation Authority Dubai, UNITED ARAB EMIRATES
Mr. Ayesha Butti Al Muhairi	Policy & Regulation Specialist General Civil Aviation Authority Dubai, UNITED ARAB EMIRATES
UNITED STATES Mr. Robert Roxbrough	FAA Senior Representative - Abu Dhabi Federal Aviation Administration Abu Dhabi – UNITED ARAB EMIRATES
ORGANIZATIONS/INDUSTRIES **ACI** Mr. SL Wong	Head - Technical & Industry Affairs Airports Council International HONG KONG
AIRBUS Mr. Omar Khalaf	Regional Safety Director AIRBUS - Dubai Airport Free Zone Dubai-UNITED ARAB EMIRATES

NAME	TITLE & ADDRESS
CANSO Ms. Hanan Qabartai	Director Middle East Affairs CANSO Amman 11194, JORDAN
EMBRAER Mr. Luis Savio dos Santos	Manager , Air Safety, EMEA & Central Asia Embraer NETHERLANDS
IATA Mr. Ken Sewell	Regional Director, Safety and Flight Operations IATA, MENA Amman 11194, JORDAN
Mr. Jehad Faqir	Deputy Regional Director Safety and Flight Operations, MENA IATA, MENA Amman11194 JORDAN
Ms. Rose Al Osta	Regional Safety & Flight Operations Manager IATA, MENA Amman11194 JORDAN
IFATCA Mr. Fateh Bekhti	Executive Vice President Africa and Middle East IFATCA
MIDRMA Mr. Fareed Abdullah Al Alawi	MIDRMA Manager MIDRMA KINGDOM OF BAHRAIN
Mr. Fathi Ibrahim Al-Thawadi	MIDRMA Officer MIDRMA KINGDOM OF BAHRAIN

- END -