REPORT OF THE SECOND MEETING OF THE ACCIDENT AND INCIDENT ANALYSIS WORKING GROUP

(AIA WG/2)

(Cairo, Egypt, 14 – 16 March 2017)

The views expressed in this Report should be taken as those of the RASG Steering Committee and not of the Organization. This Report will, however, be submitted to the RASG-MID 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 Second meeting of the Accident and Incident Analysis Working Group (AIA WG/2) was held at the ICAO MID Regional Office, Cairo, Egypt, 14 – 16 March 2017.

2. OPENING

2.1 The meeting was opened by Mr. Mohamed Smaoui, Deputy Regional Director, ICAO Middle East (MID) Regional Office, who welcomed all the participants to Cairo and thanked them for their participation.

2.2 Mr. Smaoui highlighted that in accordance with the AIA WG terms of reference, the Group is required to gather information from different available sources on the accidents and incidents pertaining to the MID Region, which is a challenging task. Another task assigned to the Group which is directly dependent on the level of reporting, is the identification of the root causes and contributing factors, in order to support the MID-RAST in the development of mitigation measures. He underlined that this meeting is a good opportunity for the Group to agree on the working arrangements and mechanism to be implemented in order to achieve the above-mentioned objectives.

2.3 Mr. Adnan Mohamed Malak, AIA WG Chairman, welcomed all the participants and emphasized that the availability of data is vital for the success of the AIA WG.

3. ATTENDANCE

3.1 The meeting was attended by a total of twenty eight (28) participants from five (5) States (Egypt, Iran, Mauritania, Saudi Arabia and Sudan) and three (3) Organizations/Industries (Embraer, IATA and IFATCA). The list of participants is at **Attachment A**.

4. OFFICERS AND SECRETARIAT

4.1 The meeting was chaired by Mr. Adnan Mohamed Malak, Director of Safety Analysis, Aviation Investigation Bureau (AIB) from Saudi Arabia.

4.2 Mr. Mashhor Alblowi, Regional Officer, Flight Safety (FLS) was the Secretary of the meeting.

4.3 Mr. Mohamed Smaoui, Deputy Regional Director, ICAO MID Office and Mrs. Manoosh Valipoor, Management Systems Analysis Officer, from the Integrated Aviation Analysis (IAA) Section, Air Navigation Bureau, ICAO HQ, supported the meeting.

5. LANGUAGE

5.1 The discussions were conducted in the English language 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: AIA WG Work Programme

Agenda Item 3: Future Work Programme

Agenda Item 4: Any Other Business

7. CONCLUSIONS AND DECISIONS – DEFINITION

7.1 The AIA WG/2 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 CONCLUSIONS AND DECISIONS

DRAFT CONCLUSION 2/1: ACCIDENT AND SERIOUS INCIDENTS FINAL REPORTS

DRAFT DECISION 2/2: RS-RELATED ACCIDENTS ACTION GROUP

DRAFT DECISION 2/3: SCF-RELATED ACCIDENTS ACTION GROUP

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DRAFT CONCLUSION 2/5: AIA WG FOCAL POINTS

DRAFT DECISION 2/6: REVISED TERMS OF REFERENCE OF THE AIA WG

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: AIA WG WORK PROGRAMME

AIA WG Activities

2.1 The subject was addressed in WP/2 presented by the AIA WG Chairperson. The meeting was provided with a progress report on the AIA WG Core Team activities, including the development of a guideline booklet for the initial implementation phase to review, validate and analyse the available occurrence data.

2.2 The meeting noted that the majority of AIA WG Core Team members did not attend the meeting, which raised concern about the commitment and effectiveness of the Team.

Outcomes of RSC/5 meeting

2.3 The subject was addressed in WP/3 presented by the Secretariat. The meeting was apprised of the outcome of the RSC/5 meeting held at the IATA Africa/Middle East Regional Office, Amman, Jordan, 23 – 25 January 2017. The meeting noted in particular the main challenges faced by the MID-ASRT in developing the ASR:

- reporting of incidents by States is very low;

- difficulty of identification of root cause and contributing factors due to lack of sufficient information for in-depth analysis;

- unavailability of predictive safety information to be analysed in order to allow the identification and mitigation of safety concerns before accidents or incidents would even take place; and

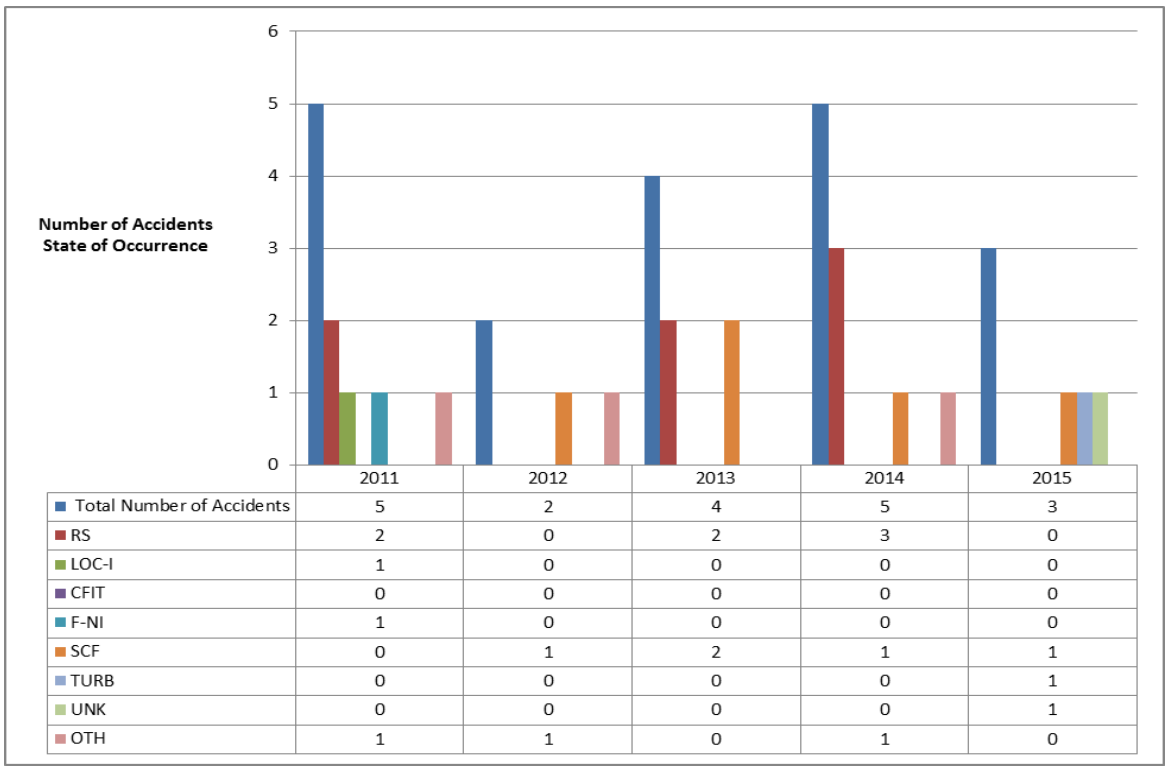
- differences in the analysis of accident data provided by the participating organizations, due to the use of different criteria and classifications.

Review and Analysis of Accidents and Serious Incidents Data

2.4 The subject was addressed in WP/4 presented by the Secretariat. The meeting recalled that the AIA WG was established with the main objective to assist the MID-ASRT with the development of the ASR, including the analysis part (identification of root causes and contributing factors).

2.5 The meeting noted that the 5th MID-ASR provides analysis of the accidents that occurred in the MID Region (State of Occurrence) for the period (2011-2015), which are used for monitoring the progress of achieving the Safety Targets included in the MID Region Safety Strategy. In this regard, the meeting noted that with regard to LOC-I, which had been identified as the third Focus Area in the Region, only 1 accident occurred during the reporting period (2011-2015). Therefore, it was questioned if the 5 year period would be sufficient/appropriate for the analysis purpose, taking into consideration the number of States and accidents in the MID Region. Accordingly, the meeting agreed that this question should be addressed by the RASG-MID.

2.6 According to the MID-ASR, 19 accidents occurred in the MID Region during the period 2011-2015, as shown below:



	2011	2012	2013	2014	2015
Total Number of Accidents	5	2	4	5	3
RS	2	0	2	3	0
LOC-I	1	0	0	0	0
CFIT	0	0	0	0	0
F-NI	1	0	0	0	0
SCF	0	1	2	1	1
TURB	0	0	0	0	1
UNK	0	0	0	0	1
OTH	1	1	0	1	0

- Runway Safety (RS) -7 Accidents
- System/Component Failure (SCF) - 5 Accidents
- Loss of Control –Inflight (LOC-I) -1 Accident
- Fire/Smoke, Non-Impact (F-NI) -1 Accident
- Turbulence encounter - In-flight turbulence encounter (TURB) -1 Accident
- Occurrence type that is not covered by any other category (OTHR)- 3 Accidents
- Unknown (UNK) – 1 Accident

2.7 The meeting recalled the Annex 13 provisions related to the release of the Final Reports on accidents and serious incidents that had been investigated. The meeting agreed that for the analysis of accident data, it is very important that the Investigation Reports be available for the AIA WG. In this respect, the meeting was informed that with regard to the 19 accidents listed above only 1 Final Report, 1 Preliminary Report and 1 Interim Statement are available in the ICAO HQ database. Egypt and Saudi Arabia indicated that their Final Reports had been already sent to ICAO HQ and copy of these Final Reports will be sent to the ICAO MID Office.

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

DRAFT CONCLUSION 2/1: 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.

2.9 The meeting invited the ICAO MID Office to issue a State Letter on the subject and follow up with the concerned States to get copy of the Final Reports related to the accidents listed above.

2.10 With respect to the review/analysis of accidents data, the meeting agreed that the group should focus on the accidents related to the RS and SCF Focus Areas. Accordingly, the meeting agreed that an Action Group should be established for each Focus Area 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. It was agreed that the composition of the Action Groups should include members from the concerned States, ICAO and safety partners. Accordingly, the meeting agreed to the following Draft Decisions:

DRAFT DECISION 2/2: RS-RELATED ACCIDENTS ACTION GROUP

That,

a) the RS-related Accidents Action Group is established to review and analyse accidents data related to RS and identify root causes and contributing factors, as well as *the associated safety recommendations, in coordination with the RGS WG;*

b) the RS-related Accidents Action Group is composed of members designated by Iran, Saudi Arabia, Sudan, UAE, IATA, IFATCA and ICAO (*Rapporteur of the Group).*

DRAFT DECISION 2/3: SCF-RELATED ACCIDENTS ACTION GROUP

That,

a) the SCF-related Accidents Action Group is established to review and analyse accidents data related to SCF and identify root causes and contributing factors, as well as *the associated safety recommendations; and*

b) the SCF-related Accidents Action Group is composed of members designated by Iran, Oman, IATA, Embraer and ICAO (*Rapporteur of the Group).*

2.11 With respect to the analysis of the serious incidents data, the meeting agreed that the group should focus, as a first step, on the analysis of accidents data until such time when enough data related to serious incidents would be available. It was highlighted that the same methodology for the analysis of accidents would be used for the analysis of serious incidents.

Analysis of Incidents Data

2.12 The subject was addressed in WP/5 presented by the Secretariat. The meeting highlighted that with regard to incidents, in the majority of the cases no investigation is carried out by the Investigation Authority. However, the reporting and analysis of incidents is an integral part of the Safety Management activities (SSP/SMS). It was underlined that reporting of incidents by States is very low and is one of the challenges faced by the MID-ASRT in developing the proactive safety information Section of the MID-ASR.

2.13 The meeting agreed that States should share their analyses related to the following top 5 areas of concern: Near midair Collision (NMAC), Loss of Separation, Take off Clearance with Runway in use, Wake Turbulence –Encountered and Callsign Confusion.

2.14 Based on the above, the meeting agreed the following Draft Conclusion:

DRAFT CONCLUSION 2/4: SHARING OF INCIDENTS ANALYSES

That, States be invited to present to the AIA WG/3 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

2.15 In the same vein, the meeting recalled that the RSC/5 meeting, through Draft Conclusion 2/4, urged States to share their Safety Recommendations after the completion of investigation; and tasked the MID-SST to coordinate with the 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.

Accidents and Incidents Analysis Online Platform

2.16 The subject was addressed in WP/6 and PPT/1 presented by the Secretariat. The meeting was apprised of the progress made by ICAO HQ in developing the online Tool based on the outcome of the AIA WG/1 meeting. It was highlighted that the iSTARS and ADREP databases will be used as the main sources of data.

2.17 In order to continue the development of the tool, the meeting discussed the following:

a) the criteria for inclusion of occurrences in the tool;
b) the fields to be collected and related taxonomies;
c) the workflow of validating occurrence data;
d) the roles of the users of the tool; and
e) the procedures to be followed by the users of the tool.

2.18 With respect to a), the meeting agreed that, in the first phase only the occurrences related to accidents and serious incidents will be processed.

2.19 Concerning b), it was highlighted that the iSTARS ADREP Occurrence Data Form includes twenty-seven fields for each occurrence. Twenty-five of these are standard fields used in ECCAIRS. The two additional fields are related to the main root cause and contributing factors. The meeting agreed that the taxonomy developed by the AIA WG Core Team at **Appendix 2A** be used for the main root cause and contributing factors fields.

2.20 With regard to c), the meeting agreed to the following four stages:

1- **Not Reviewed**: the initial stage for an occurrence that meets the data selection criteria;
2- **Under Review**: the occurrence is under active review and will be edited by authorized users;
3- **Valid**: the changes made to the occurrence are accepted; and
4- **Invalid**: the occurrence will be marked as invalid.

2.21 The meeting agreed to the following roles associated with the workflow:

1- **Reviewer**: a user in this role may review the occurrence and contribute to the discussion about the occurrence, but may not make any changes to the occurrence report;
2- **Editor**: this role gives the user the ability to make changes to the occurrence report. An "Editor" may change an occurrence report from "Not Reviewed" to "Under Review"; and
3- **Validator**: the user with this role may move an occurrence report from "Under Review" to "Valid" or "Invalid" stages.

2.22 The meeting agreed that certain fields should only be for the designated State Focal Points to edit, whereas other fields need to be editable by both States and the AIA WG. The option to create new occurrences would be available to States only. The iSTARS ADREP Occurrence Data Form at **Appendix 2B** reflects the agreed editing roles.

2.23 It was agreed that the final validation of updates (including root cause and contributing factors) should be performed by the AIA WG.

2.24 The meeting noted that, each occurrence report will have a forum-like space for discussions. All users can use this feature to discuss the occurrence without having to make changes to it. Once consensus has been reached on a specific amendment, an "Editor" can set the agreed values on the system; and the "Validator" may then review the occurrence report and set it as "Valid".

2.25 Based on the forgoing, the meeting agreed that in order to facilitate the coordination of all issues related to the collection and validation of occurrence data, States should assign a focal point(s). Accordingly, the meeting agreed to the following Draft Conclusion:

DRAFT CONCLUSION 2/5: AIA WG FOCAL POINTS

That, States be urged to assign a focal point(s) to be the main point of contact for all issues related to the AIA WG, including the use of the Accidents and Incidents Analysis Online Platform.

2.26 The meeting agreed to the following timelines for the development, testing and use of the Accidents and Incidents Analysis Online Platform:

- **15 May 2017**: tool available for testing (all functionalities available and accident data sourced from iSTARS).

- **12 June 2017**: validated accident data available on the online platform.

REPORT ON AGENDA ITEM 3: FUTURE WORK PROGRAMME

3.1 The meeting reviewed and updated the AIA WG TORs as at **Appendix 3A**. Accordingly, the meeting agreed to the following Draft Decision:

DRAFT DECISION 2/6: REVISED TERMS OF REFERENCE OF THE AIA WG

*That, the Terms of Reference of the AIA WG be updated as at **Appendix 3A**.*

3.2 The meeting agreed that the AIA WG/3 meeting be scheduled for March-April 2018. The exact date and venue will be coordinated between the ICAO MID Office and the Chairperson of the AIA WG.

REPORT ON AGENDA ITEM 4: ANY OTHER BUSINESS

4.1 The meeting noted that the ACAC/ICAO AIG Workshop would be held in Jeddah, Saudi Arabia from **25 to 27 April 2017** in order to finalize the Strategy for the establishment of a Middle East RAIO; and a Workshop on the Protection of Accident and Incident Investigation records would be held in Cairo, Egypt from **3 to 5 July 2017**. The meeting encouraged States and International Organizations to participate actively in these two (2) Workshops.

APPENDICES

APPENDIX 2A

ACCIDENT AND INCIDENT ANALYSIS WORKING GROUP (AIA - WG) TAXONOMY

Contributing Factors:

a- Environmental Factors

- ✓ *Physical Environment:*
  Examples: Meteorological conditions, Workplace conditions, Thermal stress, Maneuvering, forces – in flight, Noise interference
- ✓ *Technological Environment:*
  Examples: Visibility restrictions, Control and switches, Seating and restrains, Automation

b - Conditions of Individuals:

- ✓ *Cognitive Factors:*
  Examples: Inattention, Channelized attention, Task oversaturation, Confusion, Distraction, Checklist interference.
- ✓ *Psycho - Behavioral Factors:*
  Examples: Pre – existing personality disorder, Emotional State, Personality style, Over Confidence, Complacency.
- ✓ *Adverse Physiological States:*
  Examples: Physical fatigue, Hypoxia, Motion sickness, mental fatigue, prescribed illness
- ✓ *Physical Mental Limitations:*
  Examples: Learning ability rate, Memory ability lapses, Technical/ procedural knowledge.
- ✓ *Perceptual Factors:*
  Examples: Illusions, Misperception of operational conditions, Misinterpreted, Misread instruments, Expectancy.

c - Personal Factors:

- ✓ *Coordination / communication planning factors:*
  Examples: Crew / team leadership, Task delegation, Communicating critical information, Standard / proper terminology, Cross – monitoring performance.
- ✓ *Self-imposed stress:*
  Examples: Physical fitness, Drugs / self-medication, Inadequate rest, Nutrition.

d - Supervision:

- ✓ *Inadequate Supervision.*
- ✓ *Planned inappropriate operations.*
- ✓ *Failed to correct known problem.*
- ✓ *Supervisory violations.*

Root Cause Types:

a- Latent Conditions (deficiencies in):

- ✓ *Design:*
  Examples: Design short comings, manufacturing defects.
- ✓ *Regulatory oversight.*
- ✓ *Management Decisions:*
  Examples: Cost cutting, Stringent Fuel Policy, Outsourcing and other decisions which Impact operational safety.
- ✓ *Safety Management:*
  Examples: Absent/ deficient of: Safety policy and objectives, Safety risk management including hazard identification process, Safety assurance including Quality Management, Safety promotion.
- ✓ *Change Management:*
  Examples: Deficiencies in monitoring change in addressing operational needs created by expansion or downsizing, Deficiencies in the evaluation to integrate and/or monitor changes to establish organizational practices or procedures, Consequences of mergers or Acquisitions.
- ✓ *Operations planning and scheduling:*
  Examples: Deficiencies in crew rostering and staffing practices, Issues with flight and duty time Limitations, Health and welfare issues.
- ✓ *Technology and Equipment:*
  Examples: Available safety equipment not installed; E-GPWS, predictive wind-shear, TCAS/ACAS, etc.)
- ✓ *Standard Operating Procedures & checking:*
  Examples: Deficient or absent of: Standard Operating Procedures (SOPs), Operational instructions and/or policies, Company regulations, Controls to assess compliance with regulations and SOPs.
- ✓ *Training Systems:*
  Examples: Omitted training, language skills deficiencies, qualifications and experience of flight crews, operational needs leading to training reductions, deficiencies in assessment of training or training resources such as manuals or CBT devices"
- ✓ *Other:*
  Example: Not clearly falling within the other latent conditions.

b- Threats:

- ✓ *Environmental threats:*
  1. *Metrology:*
  Examples: Thunderstorms, Poor visibility/IMC, Wind/ windshear/ gusty wind, icing conditions.
  2. *Lack of visual reference:*
  Examples: Darkness/ black hole effect, Environmental situation which can lead to spatial orientation.

3. Air Traffic services:
Examples: Tough to meet clearances/restrictions, reroutes, Language difficulties, controller errors, failure to provide separation (air or ground).
4. Wildlife/ Birds, Objects.
5. Airport facilities:
Examples: Poor signage, faint markings, Runway/taxiway closures, Contaminated runways/ taxiways, Poor braking actions, Trenches/ ditches, Inadequate overrun area, Structures in close proximity to runway/taxiway, Inadequate airport perimeter control/ fencing, Inadequate wildlife control"
6. Navigational aids:
Examples: Ground navigation aid malfunction, Lack or unavailability (e.g., ILS), NAV aids not calibrated – unknown to flight crew
7. Terrain/ Obstacles.
8. Traffic.

- ✓ *Airline threats:*
  1. Aircraft Malfunction.
  2. Operational Pressure:
  Examples: Operational time pressure, Missed approach/diversion, other non-normal operations.
  3. Cabin events:
  Examples: Cabin events (e.g., unruly passenger), Cabin crew errors, Distractions/ interruptions.
  4. Ground events:
  Examples: Aircraft loading events, fueling errors, Agent interruptions, improper ground support, improper deicing/anti-icing.
  5. Dispatch/ paperwork:
  Examples: Load sheet errors, Crew scheduling events, late paperwork changes or errors.
  6. Maintenance events:
  Examples: Aircraft repairs on ground, Maintenance log problems, Maintenance errors.
  7. Dangerous Goods:
  Examples: carriage of articles or substances capable of posing a significant risk to health, safety or property when transported by air.
  8. Manuals/ Charts/ checklists:
  Examples: Incorrect/ unclear chart pages or operating manuals, Checklist layout/design issues.

c- Errors:

- ✓ *Aircraft handling errors:*
  1. Manual handling/flight controls:
  Examples: Hand flying vertical/ lateral/ or speed deviations, Approach deviations by choice (e.g., flying below the glide slope, Missed runway/ taxiway, failure to hold short, taxi above speed limit, Incorrect flaps, speed brake, auto brake, thrust reverser or power settings.

2. Ground navigation:
Examples: Attempting to turn down wrong taxiway/ runway, missed taxiway/ runway/ gate
3. Automation:
Examples: Incorrect altitude, speed, heading, auto throttle settings, mode executed, or entries.
4. Systems/radios/instruments:
Examples: Incorrect packs, altimeter, fuel switch settings, or radio frequency dialed.

- ✓ *Procedural errors:*
  1. SOP Adherence, SOP cross verification:
  Examples: Intentional or unintentional failure to cross-verify (automation) inputs, Intentional or unintentional failure to follow SOPs, PF makes own automation changes, Sterile cockpit violations.
  2. Checklist errors:
  Examples: Checklist performed from memory or omitted, wrong challenge and response, Checklist performed late or at wrong time, Checklist items missed.
  3. Callouts:
  Examples: Omitted takeoff, descent, or approach callouts.
  4. Briefings:
  Examples: Omitted departure, takeoff, approach, or handover briefing; items missed, Briefing does not address expected situation
  5. Documentation:
  Examples: Wrong weight and balance information, wrong fuel information, Wrong ATIS, or clearance recorded, Misinterpreted items on paperwork, Incorrect or missing log book entries.
  6. Failure to go around after a destabilized approach:
  Example: Flight crew does not execute a go-around after stabilization requirements are not met.
- ✓ *Communication errors:*
  1. With Air Traffic Control:
  Examples: Flight crew to ATC – missed calls, misinterpretation of instructions, or incorrect read-backs, Wrong clearance, taxiway, gate or runway communicated.
  2. With Cabin Crew:
  Examples: Errors in communication, Lack of communication.
  3. With Ground Crew:
  Examples: Errors in communication, Lack of communication.
  4. With Dispatch:
  Examples: Errors in communication, Lack of communication.
  5. With Maintenance:
  Examples: Errors in communication, Lack of communication.

6. Pilot to Pilot communication:
Examples: within flight crew miscommunication, Misinterpretation, Lack of communication.

Definitions:

a- Latent Conditions:
Conditions present in the system before the accident and triggered by various possible actor.
b- Threats:
An event or error that occurs outside the influence of the flight crew, but which requires crew attention and management if safety margins are to be maintained.
c- Errors:
An observed flight crew deviation from organizational expectations or crew intentions.

ADREP Taxonomy's:

a. Damage Aircraft Taxonomy:
The ADREP damage aircraft taxonomy is a set of terms used by ICAO to categorize an occurrence by the highest level of damage sustained by any aircraft involved in that occurrence.

- ✓ *Destroyed:*
  The damage sustained makes it inadvisable to restore the aircraft to an airworthy condition. This differs from the definition of a hull loss which reads: The aircraft is damaged beyond economical repair. A determination of "Hull loss" is thus not the result of a technical evaluation but may result from economic considerations.
- ✓ *Substantial:*
  The aircraft sustained damage or structural failure which: - adversely affected the structural strength, performance or flight characteristics of the aircraft and - would normally require major repair or replacement of the affected component, except for engine failure or damage, when the damage is limited to the engine, its cowlings or accessories; or for damage limited to propellers, wing tips, antennas, tyres, brakes, fairings, small dents or puncture holes in the aircraft skin. In this context, a major repair is a repair.
  1. *That, if improperly done, might appreciably affect weight, balance, structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness; or*
  2. *That is not done according to accepted practices or cannot be done by elementary operations.*
- ✓ *Minor:*
  The aircraft can be rendered airworthy by simple repairs or replacement and an extensive inspection is not necessary.

- ✓ *None:*
  The aircraft sustained no damage.
- ✓ *Unknown:*
  The damage level is unknown.

b. Flight Phase Taxonomy:

The ADREP Flight Phase taxonomy is a set of terms used by ICAO to categorize the operational phase during which an aircraft accident and incident happened.

For the purposes of this taxonomy, phase of flight refers to a period within a flight. A flight begins when any person boards the aircraft with the intention of flight and continues until such time as all such persons have disembarked.

The terms of this taxonomy are grouped into primary and secondary terms. Every occurrence should have associated:

- ✓ *Primary flight phase:*
  Standing, Taxi, Takeoff, Initial climb, En route, Maneuvering, Approach and Landing.
- ✓ *Secondary flight phase:*
  Emergency descent, uncontrolled descent, Post-impact, Pushback/towing and Unknown.

c. Injury Level Taxonomy:

The ADREP injury level taxonomy is a set of terms used by ICAO to categorize an occurrence by the highest level of injury sustained by any person in that occurrence.

- ✓ *Fatal:*

For statistical purposes "Fatal" is death from an injury received in the occurrence which occurs within 30 days of the accident.

- ✓ *Serious:*

A serious injury is an injury sustained by a person in an accident and which:

1. *Requires hospitalization for more than 48 hours, commencing within 48 hours from the date when the injury was received; or*
2. *Results in a fracture of any bone (except simple fractures of fingers, toes, or nose or;*
3. *Involves lacerations which cause severe hemorrhage, nerve, muscle or tendon damage; or*
4. *Involves injury to any internal organ; or*
5. *Involves second or third degree burns, or any burns affecting more than 5 percent of the body surface; or*
6. *Involves verified exposure to infectious substances or injurious radiation.*

- ✓ *Minor:*
  Any other injuries other than fatal or serious are minor.
- ✓ *None:*
  Nobody was injured during the occurrence.
- ✓ *Unknown:*
  The injury level unknown.

d. Occurrence class taxonomy:

The ADREP Occurrence class taxonomy is a set of terms used by ICAO to categorize occurrences by severity.

- ✓ *Accident:*

  "An occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, in which:

  1. *A person is fatally or seriously injured as a result of:*
     - *Being in the aircraft, or*
     - *Direct contact with any part of the aircraft, including parts which have become detached from the aircraft, or*
     - *Direct exposure to jet blast, except when the injuries are from natural causes, self-inflicted or inflicted by other persons, or :* when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew;*
  2. *The aircraft sustains damage or structural failure which:*
     - *Adversely affects the structural strength, performance or flight characteristics of the aircraft, and would normally require major repair or replacement of the affected component, except for engine failure or damage, when the damage is limited to the engine, its cowlings or accessories; or*
     - *For damage limited to propellers, wing tips, antennas, tires, brakes, fairings, small dents or puncture holes in the aircraft skin;*
  3. *The aircraft is missing or is completely inaccessible.*

- ✓ *Serious incident:*

  An incident involving circumstances indicating that an accident nearly occurred.
  Examples of serious incidents can be found in Attachment D of ICAO Annex 13 and in the ICAO Accident/Incident Reporting Manual (ICAO Doc 9156).

- ✓ *Incident:*

  An occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation.
  The type of incidents which are of main interest to the International Civil Aviation Organization for accident prevention studies are listed in the ICAO Accident/Incident Reporting Manual (ICAO Doc 9156) and ICAO Annex 13."

- ✓ *Occurrence without safety effect:*

  An incident which has no safety significance.

- ✓ *Not determined**:***

  The class of the occurrence has not been determined.

e. Occurrence Category Taxonomy:

The ADREP Occurrence category taxonomy is a set of terms used by ICAO to categorize aircraft accidents and incidents. The terms of this taxonomy are grouped into:

✓ *Primary:*

Abnormal runway contact	*ARC*
Birdstrike	*BIRD*
Controlled flight into or toward terrain	*CFIT*
Collision with obstacle(s) during take-off and landing	*CTOL*
Fire/smoke (non-impact)	*F-NI*
Ground Collision	*GCOL*
Loss of control - inflight	*LOC-I*
Airprox/ ACAS alert/ loss of separation/ (near) midair collisions	*MAC*
Ground Handling	*RAMP*
Runway excursion	*RE*
Runway - wildlife presence	*RI-A*
Runway incursion - vehicle, aircraft or person	*RI-VAP*
System/component failure or malfunction [non-powerplant]	*SCF-NP*
Powerplant failure or malfunction	*SCF-PP*
Undershoot/overshoot	*USOS*

✓ *Secondary:*

ATM/CNS	*ATM*
Loss of control - ground	*LOC-G*
Turbulence encounter	*TURB*
Fuel related	*FUEL*
Aerodrome	*ADRM*
Low altitude operations	*LALT*
Fire/smoke (post-impact)	*F-POST*
Windshear or thunderstorm	*WSTR W*
Icing	*ICE*
Evacuation	*EVAC*
Security related	*SEC*
Cabin safety events	*CABIN*
Abrupt manoeuvre	*AMAN*
Loss of lifting conditions en-route	*LOLI*

Unintended flight in IMC	*UIMC*
Glider towing related events	*GTOW*
External load related occurrences	*EXTL*
Unknown or undetermined	*UNK*

f. Operation type taxonomy:

The ADREP operation type taxonomy is a set of terms used by ICAO to categorize an occurrence by the type of flight.

- ✓ *Commercial Air Transport (CAT)*
- ✓ *Scheduled Commercial Air Transport (SCAT)*
  1. *Involving the transport of passengers, cargo or mail for remuneration or hire, and*
  2. *Open to use by the general public, and*
  3. *Operated according to a published timetable or with such a regular frequency that it constitutes an easily recognizable systematic series of flights which are open to direct booking by members of the public.*
- ✓ *Non-Scheduled Commercial Air Transport (SCAT)*
  Charter flights and special flights performed for remuneration other than scheduled commercial flights.
- ✓ *Other Commercial Air Transport (CAT-O)*
  Any other commercial air transport flights like air taxi, emergency medical services, ferry/ positioning flights etc.
- ✓ *General aviation (GA)*
  All civil aviation operations other than scheduled air services and non-scheduled air transport operations for remuneration or hire or aerial work.
- ✓ *Aerial work (AW)*
  An aircraft operation in which an aircraft is used commercially or none commercially for specialized services such as agriculture, construction, photography, surveying, observation and patrol, search and rescue, aerial advertisement, etc.
- ✓ *State flight (SF)*
  An aircraft operation in which an aircraft is used for military, customs, police or other state internal services.

APPENDIX 2B

iSTARS ADREP Occurrence Form

Section (editable by)	Name	Data type	Source
Filing Information (State)	**Reporting State/Organization**	Value list	ISO 3166-1 list of country codes
When (State)	**Occurrence Date**	Date	ISO 8601
	Occurrence Time (UTC)	Time	ISO 8601
Where (State)	**State of occurrence**	Value list	ISO 3166-1 list of country codes
	Location of occurrence	Text	
	FIR	Value list	FIR Codes
	Latitude (ddmmss)	Latitude	
	Longitude (dddmmss)	Longitude	
Classification (both State and WG)	Occurrence class	Value list	Occurrence Class Taxonomy
	Occurrence category	Value list	Occurrence Category Taxonomy
Severity (State)	Damage aircraft	Value list	Damage Aircraft Taxonomy
	Injury level	Value list	Injury Level Taxonomy
	Fatalities	Number	
Narrative (State)	Narrative	Text	
Aircraft Identification (State)	Aircraft registration	Text	
	Aircraft Category	Value List	
	Manufacturer/model	Text	
	State of registry	Value list	ISO 3166-1 list of country codes
Operator (State)	State of the Operator Operator Name/Code	Text	
Operation Type (State)	Operation type	Value list	Operation Type Taxonomy
Mass Group (State)	Mass group	Value list	MG1: 0-2250 kg MG2: 2251 - 5700 kg MG3: 5701 - 27000 kg MG4: 27001 - 272000 kg MG5: >272000 kg UNK: Unknown
History of Flight: Itinerary (State)	Last departure point	Value list	4L Airport Codes
	Planned destination	Value list	4L Airport Codes
	Flight phase	Value list	Flight Phase Taxonomy
Analysis (both State and WG)	Main root cause	Value list	
	Contributing factors	Value list	Hazard Taxonomy

APPENDIX 3A

ACCIDENTS AND INCIDENTS ANALYSIS WORKING GROUP (AIA WG)

TERMS OF REFERENCE

A) PURPOSE OF THE AIA WG:

The AIA WG is established to review~~,~~ and analyse ~~and categorize~~ on an annual basis the accidents and incidents that occurred in the MID Region (State of Occurrence) or which involved an aircraft registered in the MID Region (State of Registry) or owned and/or operated by an Air Operator from the MID Region (State of the Operator).~~, for all types of operations, including but not limited to commercial/non-commercial, scheduled/non-scheduled and general aviation.~~

In order to meet its Terms of Reference, the AIA WG shall:

1) gather information from different available sources on the MID Region-related accidents, ~~and~~ serious incidents and incidents;~~that:~~
   ~~a) occurred in the MID Region (State of Occurrence);~~
   ~~b) involved aircraft registered in the MID Region (State of Registry); or~~
   ~~c) involved aircraft owned and/or operated by an Air Operator from the MID Region (State of the Operator).~~
2) review and confirm the occurrence and risk categories of the accidents related to the MID Region, using the definitions and descriptions provided in ICAO Annex 13 and ADREP/ECCAIRS Taxonomy; and identify the root causes and contributing factors of the accidents related to the MID Region Focus Areas, in particular;
3) develop an agreed and harmonized MID Regional dataset of accidents and provide feedback to the ICAO Safety Indicators Study Group (SISG);
4) review and analyse the serious incidents reported in the MID Region, identify the emerging risks and associated root causes and contributing factors;
5) review the safety data provided by States related to the analysis of the top 5 reported incident categories and identify trends and measures implemented by stakeholders to mitigate the identified risks;
~~2) review, analyse and categorize the accidents and incidents using the definitions and descriptions provided in ICAO Annex 13 and ADREP/ECCAIRS Taxonomy;~~
~~3)~~6) ~~develop an agreed and harmonized MID Regional dataset of accidents and incidents and provide feedback to the ICAO Safety Indicators Study Group (SISG);~~
~~4) identify, to the extent possible, the root causes and contributing factors, in order to support the MID RAST in the development of mitigation measures;~~
~~5)~~7) provide necessary information on accidents and incidents, including the root causes and contributing factors, to the MID-ASRT for the development of the MID Annual Safety Report and to the MID RAST for the implementation of necessary mitigation measures; and
~~6)~~8) share the outcome of its meetings with the concerned MIDANPIRG subsidiary bodies, as appropriate.

B) COMPOSITION:

The Working Group is composed of Safety experts from relevant fields such as Flight Safety, Aerodromes and ANS, with grounded knowledge and experience in Accident and Incident Investigation (AIG), including the ADREP Taxonomy and ECCAIRS, nominated by RASG-MID Member States and Partners.

C) ROLES AND RESPONSIBILITIES:

- AIA WG Chairperson – Coordinate AIA WG activities and provide overall guidance and leadership;

- AIA WG Focal Points- Specialists in the AIG related subjects, particularly the analysis of accidents and incidents data in order to actively participate in and contribute to the work of the AIA WG; and ICAO – Support.

ATTACHMENT

LIST OF PARTICIPANTS

NAME	TITLE & ADDRESS
STATES	
EGYPT Mr. Abdelrahman Mahmoud Raafat Hassan Saad Zalat	SMS Audit Head of Section Egyptian Airports Company (EAC) Cairo - EGYPT
Mr. Ahmed Hani Mohamed Elkamel Eltony	Safety Specialist Egyptian Airports Company (EAC) Cairo - EGYPT
Capt. Amr Mohamed Nabil	Deputy Head of Aircraft Accident Investigation Ministry of Civil Aviation Cairo – EGYPT
Mr. Amr Ibrahim Abdel Latiff	Air Traffic Controller (ANS Inspector) Cairo Air Navigation Center Egyptian Civil Aviation Authority Cairo - EGYPT
Capt. Ayman Fouad Elmokadem	Head of Aircraft Accident Investigation Ministry of Civil Aviation Cairo – EGYPT
Mr. Atef Safa Ali Barakat	Directorate of Airport Compliance Egyptian Civil Aviation Authority Cairo International Airport Road Cairo - EGYPT
Mrs. Doaa Abdul Rady Monazea	Safety Specialist Egyptian Airports Company (EAC) Cairo - EGYPT
Capt. Elias Sadek	Chairman & CEO Egyptian Aviation Academy Cairo-EGYPT
Eng. Hazem Mohamed Elsaid	General Manager Aircraft Accident Investigation Ministry of Civil Aviation Cairo-EGYPT

Mr. Hassan Kamel Abdel Meguid	CEO Consultant Egyptian Civil Aviation Academy Cairo International Airport Road Cairo – EGYPT
Mrs. Heba Said Daramally	Safety Specialist Egyptian Airports Company (EAC) Cairo - EGYPT
Pitlot/ Hesham Amin Sabri	Assistant Chairman of the Holding Company Egyptair Holding Company Egyptair Admin. Complex Safety and Quality Cairo - EGYPT
Mr. Mahmoud Raslan Abdel Hady	Head of Safety Audit Section Egyptian Airports Company (EAC) Cairo - EGYPT
Mr. Mina Ibrahim Rizk	Aerodrome Safety Engineer Egyptian Civil Aviation Authority Cairo - EGYPT
Dr. Eng. Mohamed Abd El-Hakim Galal	Director General of Planning and Design of Airports Projects Egyptian Airports Company (EAC) Ministry of Civil Aviation Complex Cairo - EGYPT
Mr. Mohamed Ahmed Mohamed Hamdy	Safety Specialist Egyptian Airports Company (EAC) Cairo - EGYPT
Mr. Mohamed Abdel Monem Mohamed	ATS Safety Oversight Inspector/Auditor Egyptian Civil Aviation Authority Ministry of Civil Aviation Complex Cairo - EGYPT
Dr. Nermin Atteya Abdel-Kawy	Translator Directorate of Accident Investigation Ministry of Civil Aviation Cairo - EGYPT
Eng. Nabeel Ahmed Shawky Amin Soliman	Safety Department Manager - Safety & Compliance Sector Egyptian Airports Company (EAC) Cairo - EGYPT

ISLAMIC REPUBLIC OF IRAN Mr. Hassan Rezaeifar	General Director of Aircraft Accident Investigation Board Civil Aviation Organization Tehran - ISALAMIC REPUBLIC OF IRAN
MAURITANIA Mr. Mohamed Abdellah Abdel-Jelil	Technical Advisor of DG ANAC MAURITANIA
SAUDI ARABIA Mr. Abdulilah Othman Felemban	Director General - Aviation Investigation Bureau (AIB) General Authority of Civil Aviation Jeddah 21442- KINGDOM OF SAUDI ARABIA
Mr. Adnan Mohamed Malak	Director Safety Analysis Aviation Investigation Bureau-KSA Jeddah 21442 KINGDOM OF SAUDI ARABIA
Mr. Ahmad Saeed Aseery	Safety Analyst Safety Analysis Dept. Aviation Investigation Bureau-KSA Jeddah 21442 KINGDOM OF SAUDI ARABIA
SUDAN Mr. Zienelabdin Hassan Elabed Mohamed	Air Accident Investigator Sudan Civil Aviation Authority (SCAA) Khartoum - SUDAN

ORGANIZATIONS/INDUSTRIES	
EMBRAER Mr. Luis Savio DOS SANTOS	Manager, Air Safety-EMEA Embraer 1081 KM Amsterdam NETHERLANDS
IATA Mr. Jehad Faqir	Deputy Regional Director Safety & Flight Operations, MENA IATA Amman 11194 - JORDAN
IFATCA Mr. Djamel Ait Abdel Malek	IFATCA MENA Representative IFATCA

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