International Civil Aviation Organization

First Meeting of the RASG-MID Steering Committee (RSC/1)

(Cairo, Egypt, 18 – 20 June 2012)

Agenda Item 4: Regional Performance Framework for Safety

REVIEW OF THE DRAFT ANNUAL SAFETY REPORT

(Presented by the Rapporteur of the ASRT)

SUMMARY

This paper presents the draft Annual Safety Report with the analysis of the accidents and incidents data, and identification of the top three key risk areas contributing to accidents in the Middle East.

Action by the meeting is at paragraph 3.

1. INTRODUCTION

1.1 The Annual safety Report Team (ASRT) was established under Decision 1/3 of the Regional Aviation Safety Group (RASG-MID/1) Meeting which was held in September 2011.

1.2 The ASRT was established with the purpose of gathering safety information from different available sources to determine the main aviation safety risks in the Middle East Region, and issue the Annual Safety Report.

2. DISCUSSION

2.1 The objective of the RASG-MID Annual Safety Report is **to gather safety information** from different stakeholders and **to identify the main aviation safety risks** in the Middle East Region in order to deploy mitigation actions for enhancing aviation safety in a coordinated manner.

2.2 The safety information presented in the first edition of the Annual Safety Report, attached as **Appendix A** to this working paper, is based on the compilation and analysis of data provided by: Boeing, the International Air Transport Association (IATA) and the International Civil Aviation Organization (ICAO), airline operators, and States.

2.3 The Annual Safety Report comprises of three main Sections;

a) **Reactive** Information;

b) **Proactive** Information; and

c) **Predictive** Information.

2.4 Future RASG-MID Annual Safety Reports will be published annually, providing on-going updates to the air transport community on key safety indicators in the MID Region.

2.5 The data analysis exercise carried out by the ASRT identified three main risk areas which will be addressed under the RASG-MID framework;

a) Runway and Ground Safety
b) In-flight Damage
c) Loss of Control In-flight

2.6 Analysis of accidents, incidents, and occurrences, has resulted in the identification of several key contributing factors, including;

a) SOP deviation or non-compliance
b) Staff awareness and training
c) Inefficient ATC infrastructure and service
d) Environmental conditions, such as weather and wildlife
e) Safety culture

2.7 To address these contributing factors, several Safety Enhancement Initiatives (SEIs) are being proposed under WPs 4, 5, 12 and 13 and the PPT on LOC-I.

2.8 Voluntary reporting and safety culture are one of the issues that need to be addressed under the ASRT and RASG. States and airlines have equally been invited to contribute to the ASRT by providing incidents/occurrences data.

2.9 Most of the States in the region require the operators to establish and maintain a Flight Operations Quality Assurance Programme (FOQA) also called the Flight Data Monitoring Programme. Routine DFDR is downloaded and processed to identify operational risks. These trends are a very good source for identifying predictive risks.

2.10 The ASRT recommends collecting regional DFDR data Regional Flight trend data from all States with the intention of identifying the top risks. This will contribute to, and feed into the Predictive Data analysis under the Annual Safety Report.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) review and provide comments, if any, on the Draft Annual Safety Report at **Appendix A** to this working paper;

b) urge States and the Industry to provide their incident/occurrences data to the ASRT; and

c) urge States and the Industry to provide DFDR data to the ASRT.

APPENDIX A

RASG-MID Annual Safety Report – First Edition

First Edition, June 2012
Regional Aviation Safety Group – Middle East (RASG-MID)

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RASG-MID

Annual Safety Report

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Foreword

Regional Aviation Safety Group – Middle East (RASG-MID)

Background

Improving the safety of the Global Air Transport System is ICAO's guiding and most fundamental Strategic Objective. In all of its coordinated safety activities, ICAO strives to achieve a balance between identified and assessed risk and the requirements of practical and achievable mitigation strategies.

On 25 May 2010, the ICAO Council approved the establishment of the following Regional Aviation Safety Groups: RASG-PA for the Caribbean, South American, and North American regions (including Central America); RASG-EUR for the European region; RASG-APAC for the Asia Pacific regions; RASG-AFI for the African region and RASG-MID for the Middle East region, with the aim of supporting a regional performance framework for the management of safety.

The first meeting of the Directors General of Civil Aviation-Middle East (DGCA-MID/1) meeting held in Abu Dhabi, UAE from 22 to 24 March 2011 agreed to the establishment of the Regional Aviation Safety Group – Middle East (RASG-MID). Subsequently, the first RASG-MID meeting took place in Cairo, Egypt, 18-19 September 2011.

The Main objectives of RASG-MID are to:

a) to support the implementation of the Global Aviation Safety Plan (GASP) and the associated Global Aviation Safety Roadmap (GASR) in the MID Region by ensuring effective coordination and cooperation between all stakeholders and monitoring progress in the implementation of the GASP and GASR; and

b) to support the establishment and operation of a performance-based safety system for the Region, using the GASP and GASR, and building on the work already done by States and regional organizations.

Organizational Structure

RASG-MID membership includes representatives from MID States (those States whose territories are located within the area of accreditation of the ICAO Middle East Regional Office; i.e.: Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Oman, Qatar, Saudi Arabia, Sudan, Syria, UAE and Yemen). Other Contracting States and non-Contracting States are entitled to participate in the RASG-MID meetings as observers.

The list of permanent observers to the RASG-MID is detailed in its Terms of Reference. They represent the aircraft operators, international organizations, maintenance and repair organizations, regional and sub-regional organizations, training organizations, aircraft manufactures, airport and air navigation service providers, etc.

The RASG-MID is administered by:

a) a Chairperson and a First Vice-Chairperson elected from the Representatives designated by Member States of the Group; and by a Second Vice-Chairperson elected from the partners.
b) the ICAO Regional Director, Cairo who serves as Secretary. In the execution of his duties the Secretary will be supported by appropriate Experts from the ICAO MID Regional Office and ICAO HQ, as required.

The current Chairperson and First Vice-Chairperson are from Egypt and Oman, respectively. The Second Vice-Chairperson is from the International Air Transport Association (IATA).

A RASG-MID Steering Committee (RSC) composed of representatives from States, international/regional organizations and industry has been established to act as an advisory body to the RASG-MID, guide its work and ensure that safety initiatives are accomplished in a timely, effective and efficient manner.

The RSC is chaired by two Co-Chairpersons representing States and international organizations/industry (Partners). An Alternate from the member States and another Alternate from the Partners have been elected to replace the Co-Chairperson(s), in case of absence.

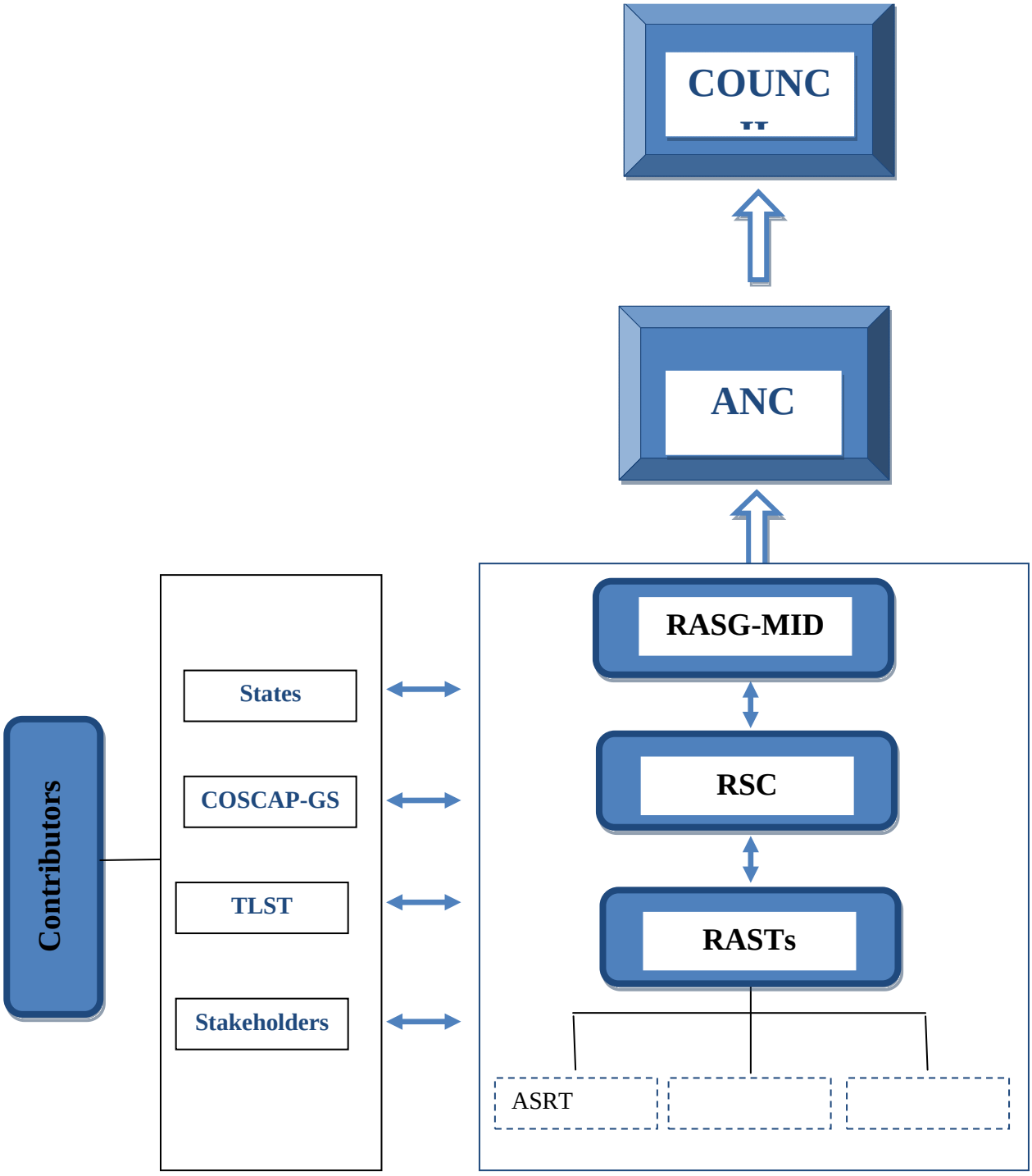
The current Co-Chairpersons are from UAE and Boeing, respectively; and the Alternates are from Jordan and the International Federation of Airline Pilots' Associations (IFALPA).

In addition to the RSC Co-Chairpersons and Alternates, the RSC membership includes also the RASG-MID Chairperson and Vice-Chairpersons, the RASG-MID Members/Alternates from Bahrain, Iran, Qatar and Saudi Arabia; and RASG-MID Representatives/Alternates from AACO, ACAC, ACI, AIRBUS, BOEING, CANSO, COSCAP-GS, EASA, FAA-USA, FSF, AIATA, IFALPA, MEASR-TLST and WFP (UN).

RASG-MID subsidiary bodies (Safety Teams) are established, as required, to assist the RASG-MID in its work and support the development, implementation and prioritization of RASG-MID safety initiatives. The Safety Teams operate in coordination with and under the guidance of the RSC. They should accomplish their tasks by developing mitigation strategies based on gathering and processing safety data and information. Currently, the only Safety Team which has been established is the Annual Safety Report Team (ASRT).
The RASG-MID Organizational Structure is depicted in Figure 1.1.

Figure 1.1

RASG-MID ORGANIZATIONAL STRUCTURE



Activities
(TBD)

Summary
In the context of renewed growth of air traffic and in light of anticipated increases in air travel, it is imperative to maintain a very strong focus on initiatives that will further improve safety outcomes in the future. ICAO is therefore, continuously developing and refining more proactive and risk-based methods to further reduce the global accident rate, enabling the safe expansion of air travel worldwide.

RASG-MID has been established with the main objective of enhancing safety in the Middle East Region by reducing duplication of efforts, and reducing human and financial resource expenditure.

The success of RASG-MID is dependent on the commitment, participation and contributions of its members from States and industry alike through financial and in-kind support.

1. Introduction

The objective of the RASG-MID Annual Safety Report is **to gather safety information** from different stakeholders and **to identify the main aviation safety risks** in the Middle East Region in order to deploy mitigation actions for enhancing aviation safety in a coordinated manner.

Every entity involved in aviation safety collects safety data and produces safety information with a different perspective. To ensure that all safety efforts are properly coordinated, the region must first agree on the key risks areas.

The safety information presented in this report is based on the compilation and analysis of data provided by: Boeing, the International Air Transport Association (IATA) and the International Civil Aviation Organization (ICAO), airline operators, and States.

This First RASG-MID Annual Safety Report is intended to provide Member States and the aviation community with a high-level analysis of the air transport safety trends and indicators in the MID Region. It presents a snapshot of safety performance within the civil aviation system in the MID Region, while providing helpful information about the numerous efforts to develop collaborative responses to safety concerns at the National and Regional level. It comprises three main sections, one for each safety information category:

1. **Reactive** Information
2. **Proactive** Information
3. **Predictive** Information

It should be noted that the Reactive Information represents the largest portion of the Report. As the system matures and the processes for the collection of proactive and predictive information in the MID Region are established, balance between the contents of the three Sections will be reached.

Future RASG-MID Annual Safety Reports will be published annually, providing on-going updates to the air transport community on key safety indicators in the MID Region.

2. Executive Summary

3. Safety Information

Information is the input of any safety management process; hazards can be identified through processing and analysis by these means, after hazards are identified the associated risk and consequences will be assessed and recommended mitigation actions will be provided to decision-makers for the final decision to implement and allocate resources.

RASG-MID can be viewed as a regional safety management process or a regional safety program (RSP) in the same way a State Safety Program (SSP) is a national safety management process and a Safety Management System is a service provider's safety management program.

The following sections show the results of safety information analysis gathered by different stakeholders and grouped as reactive, proactive and predictive safety information.

4.1 Reactive Safety Information

ICAO established a reduction in the **number of fatal accidents and fatalities** worldwide as Safety Targets for 2008-2011[1] irrespective of the volume of air traffic to achieve a significant decrease in accident rates particularly for regions where those numbers remain high and to reduce regional accident rates so that no region has a rate above twice the worldwide rate by the end of 2011. This section will assist with comprehending behaviour of the Middle East Region in regard to accidents on a world-region-state basis.
The process followed by the Annual Safety Report Team (ASRT) to analyze reactive information consisted of retrieving safety data from IATA, narrowing the search to include the fifteen (15) States/Territories of the Middle East Region.

This analysis provides an overview of the accidents between 01 Jan 2008 and 31 Dec 2011.

The analysis takes into consideration the following factors;

1. Commercial air transport only as per the IATA definition
2. Excludes military operations, training, humanitarian relief, illegal flights, crop dusting / agriculture flights, experimental / test flights, business and private aviation
3. Security related events (eg hijackings) are excluded
4. Jet and Turboprop aircraft only (Western and Eastern-built) that meets the specific weight criteria

The analysis covers non-MID and MID Operators

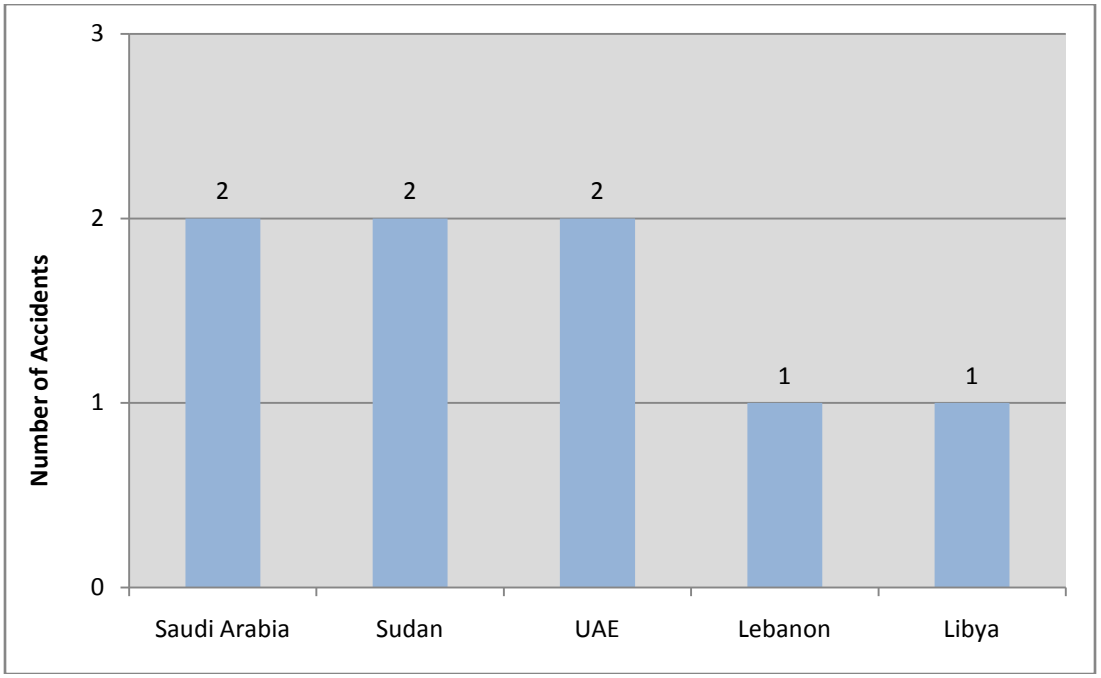
[1] Refer to ICAO Global Aviation Safety Plan (GASP) and ICAO Assembly Resolution A 37-4

4.1.1 Analysis of MID Accidents between 2008 and 2011

Non-MID Operators Accidents Count

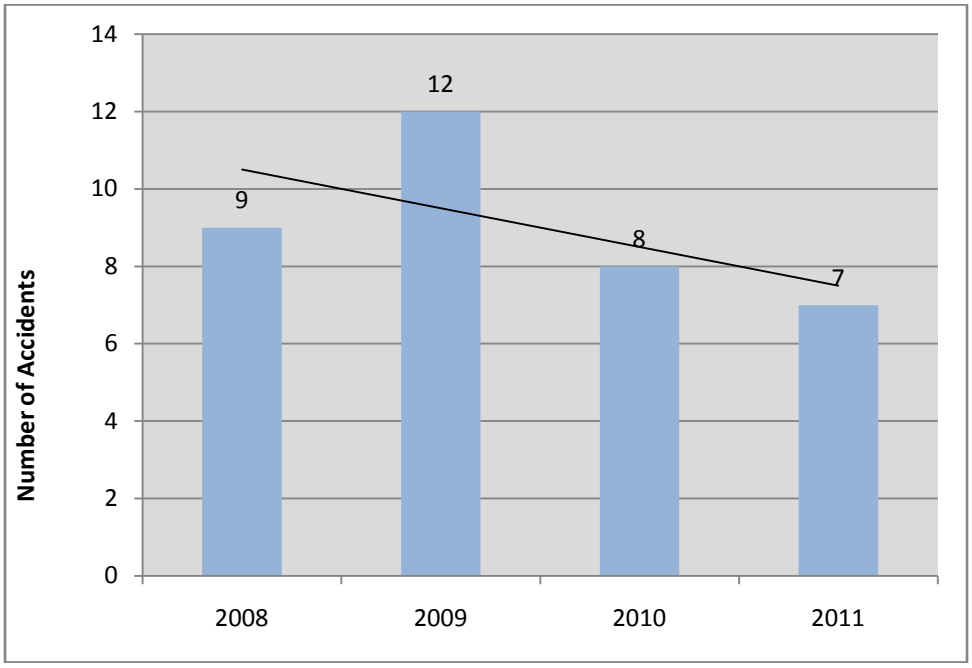
Source: IATA/GSIC

By Country of Occurrence Non-MID Operators;



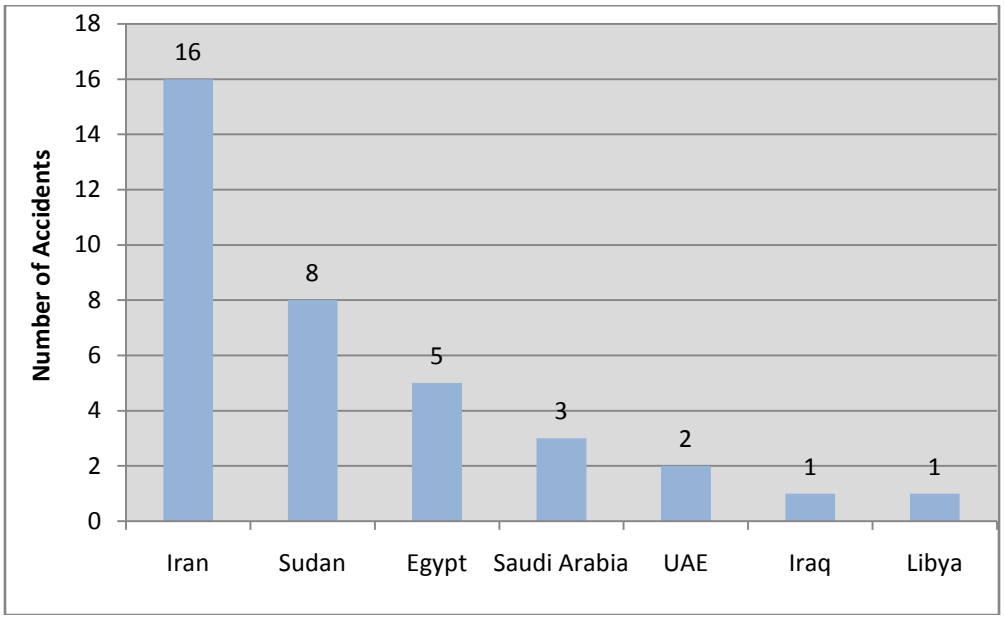
Source: IATA/GSIC

MID Operators



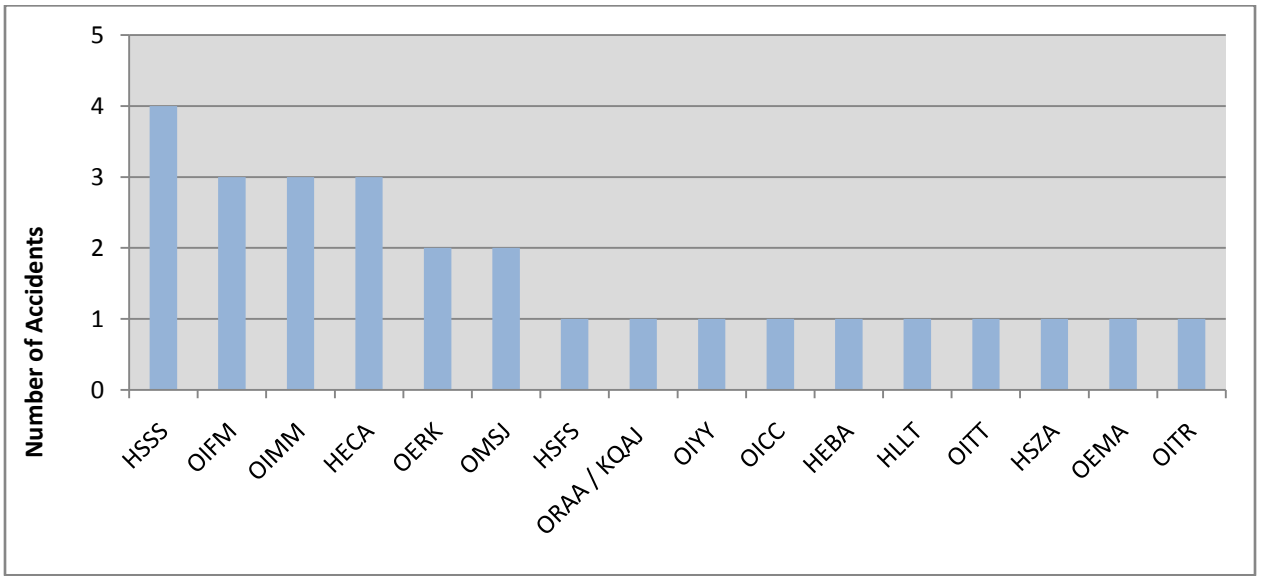
Source: IATA/GSIC

Location of Country of Occurrence for MID Operators;



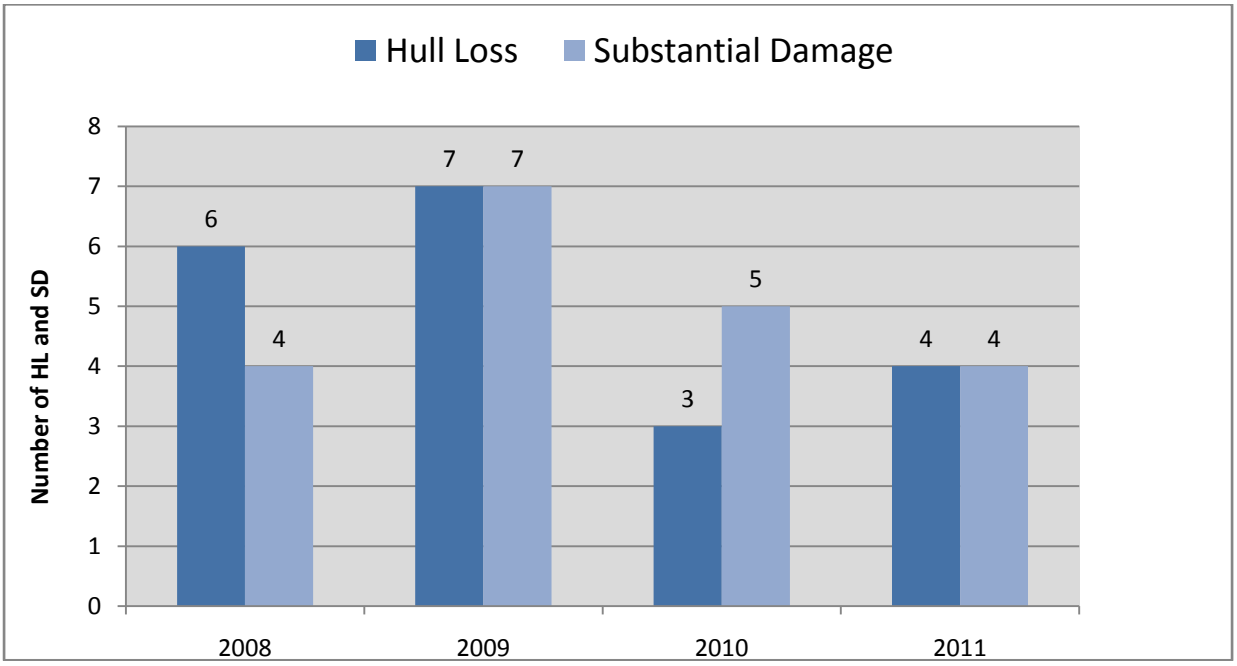
Source: IATA/GSIC

By airport for MID Operators;



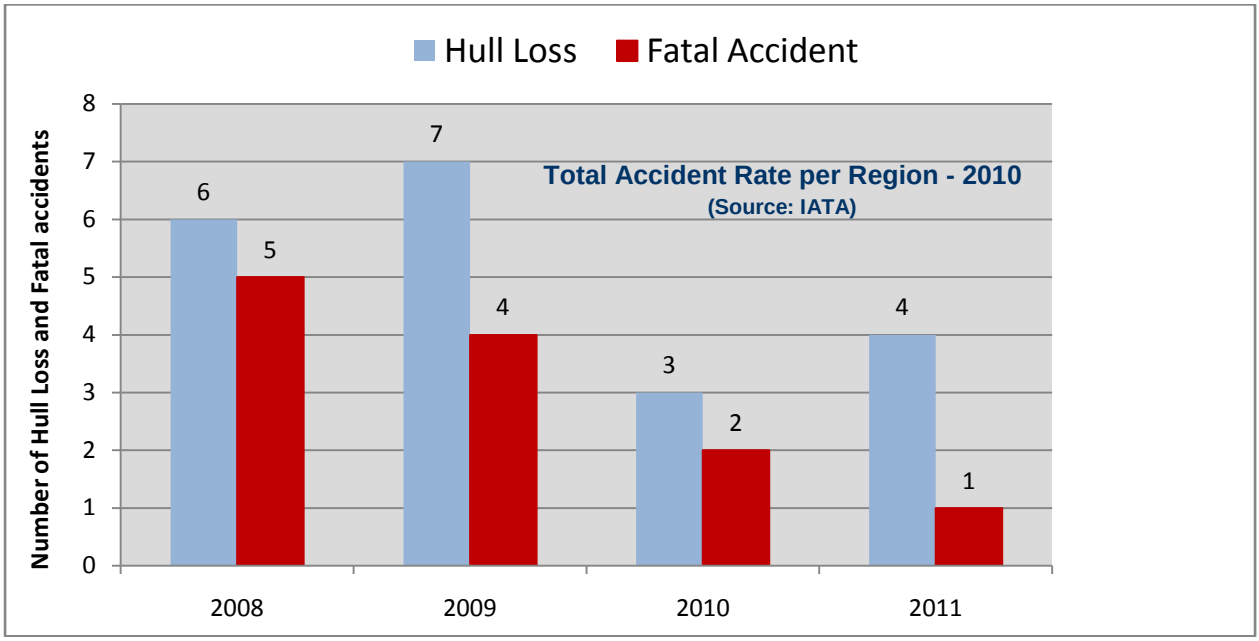
Source: IATA/GSIC

Hull Loss vs. Substantial Damage for MID Operators;



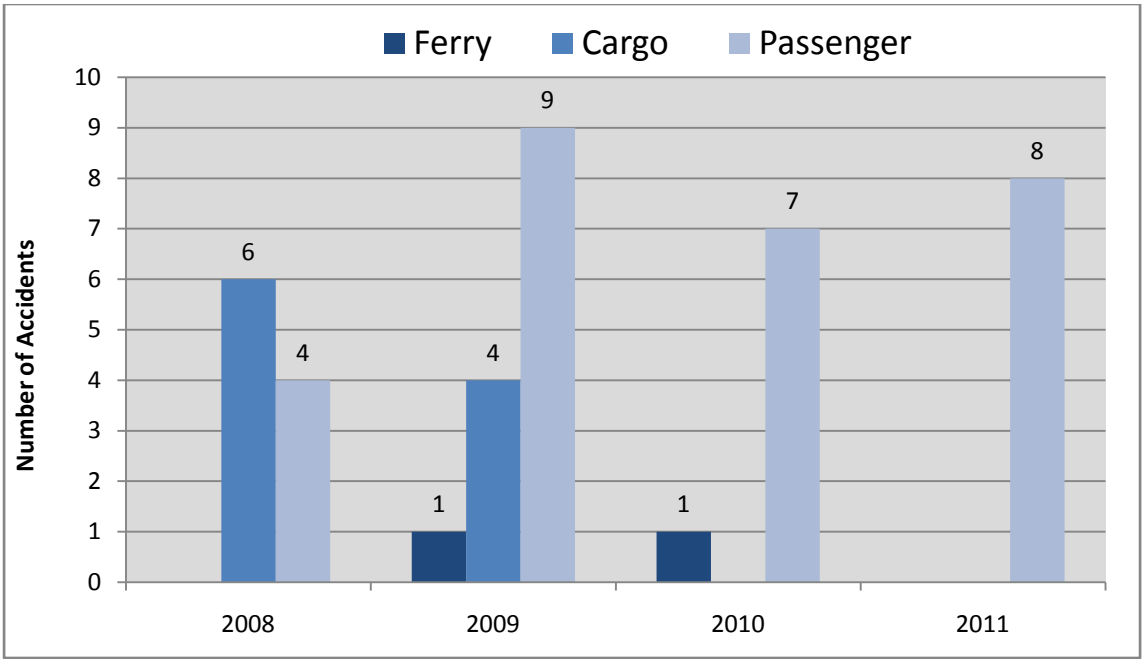
Source: IATA/GSIC

Hull Loss vs. Fatalities for MID Operators;



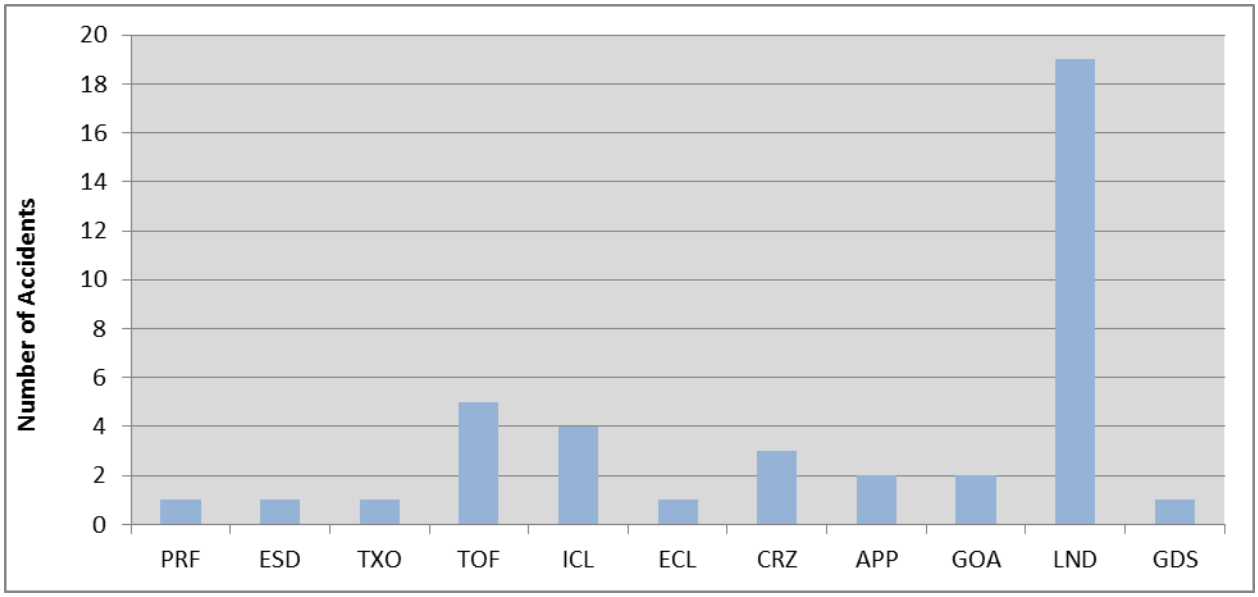
Source: IATA/GSIC

Accident Rate by Type of Service for MID Operators;



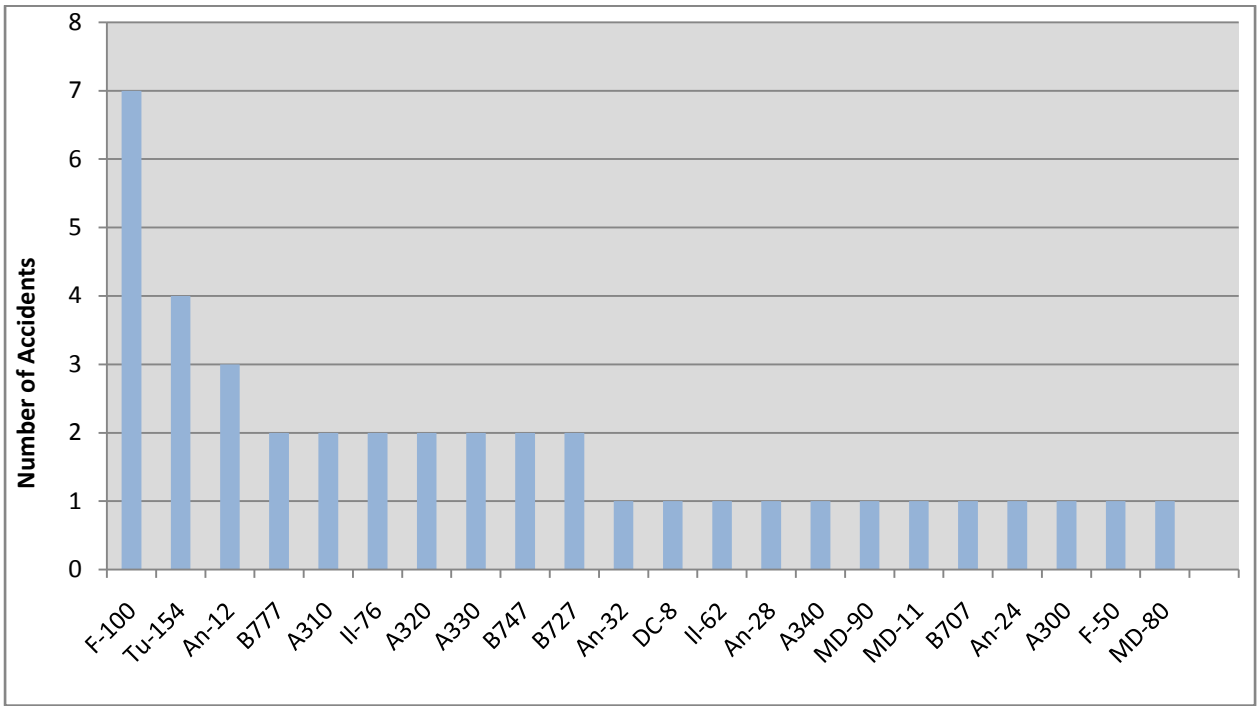
Source: IATA/GSIC

Accident Rate per Phase of Flight for MID Operators;



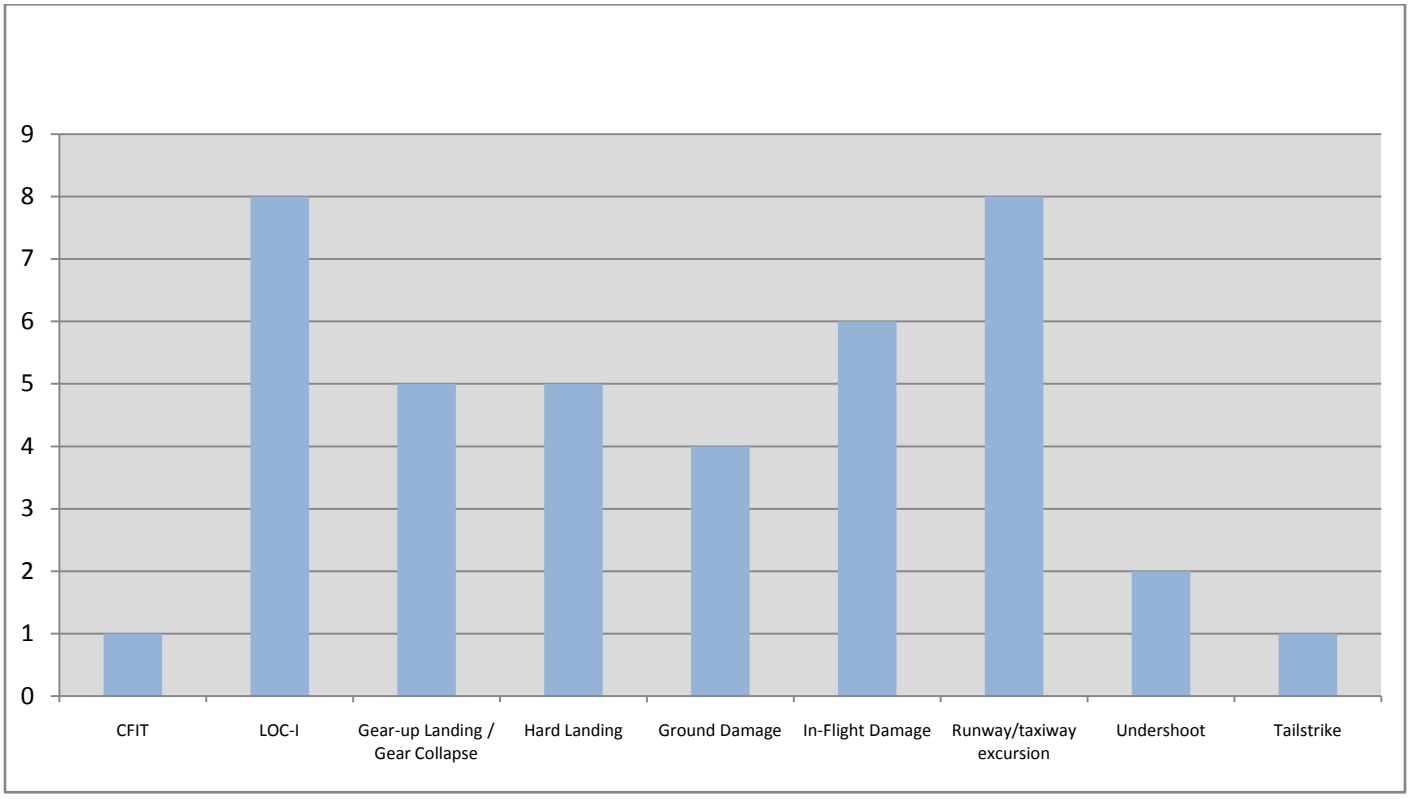
Source: IATA/GSIC

Accident Analysis per Type of Aircraft for MID Operators;



Source: IATA/GSIC

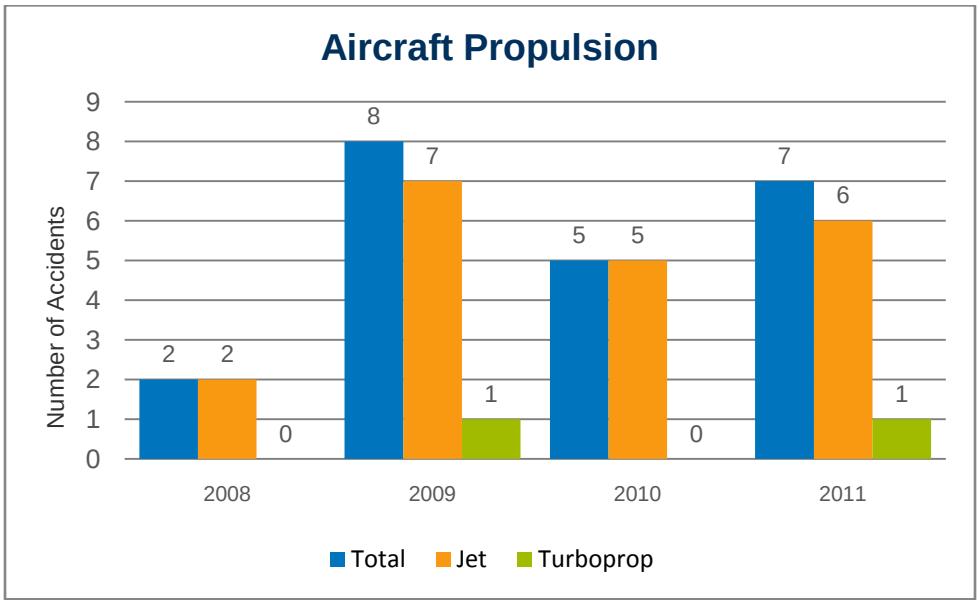
Accident Category Breakdown for MID Operators;



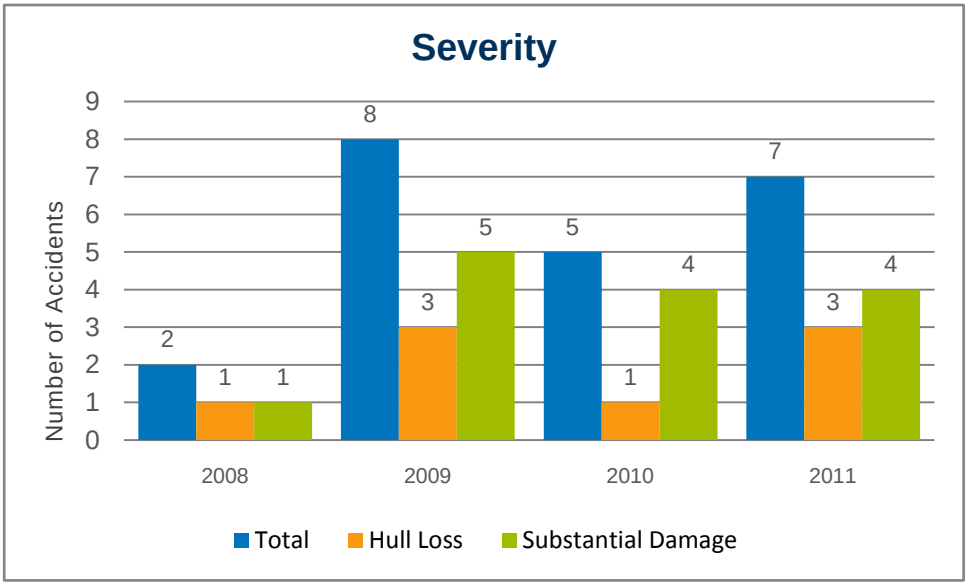
Source: IATA/GSIC

For the purpose of addressing collectively ground safety issues, Runway Excursion, Ground Damage, Hard Landing and Gear-up Landing / Gear Collapse were all combined under Runway & Ground Safety, and to address this collectively as a top accident category.

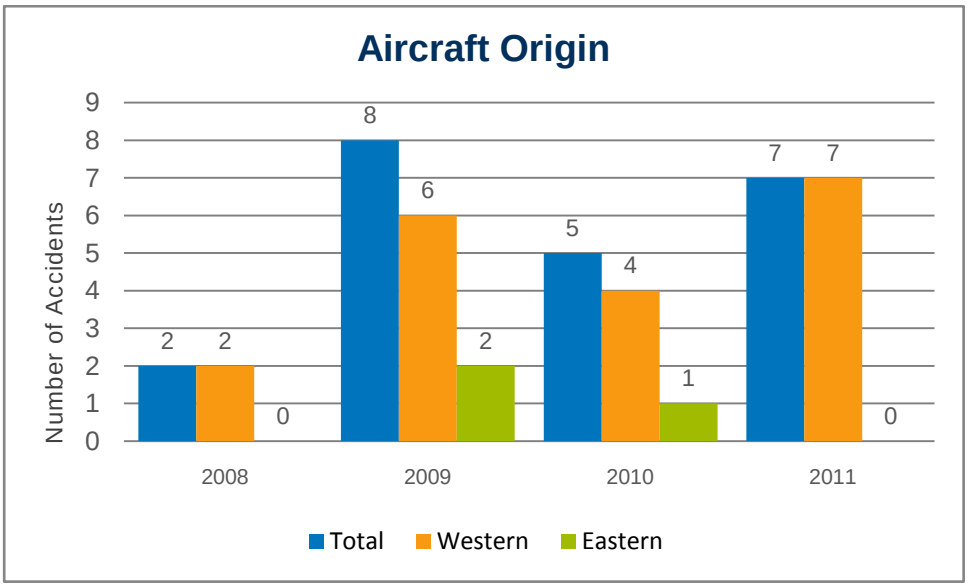
The following graphs reflect the statistics for Runway & Ground Safety related accidents;



Source: IATA/GSIC



Source: IATA/GSIC

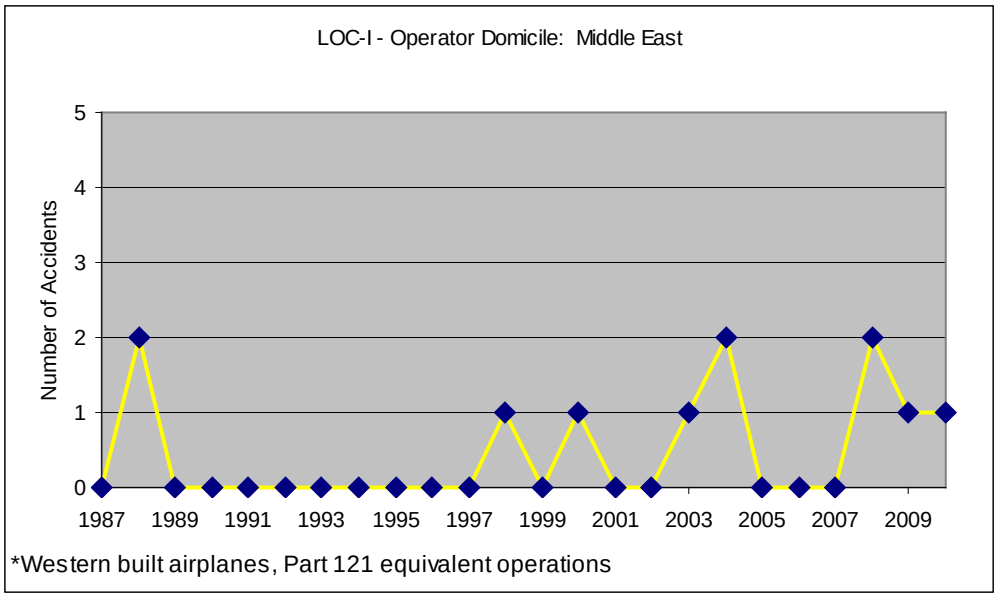


Source: IATA/GSIC

The second top accident category is In-Flight Damage, and in the following is an outline of contributing factors;

Category	**Classification**
Airline Threats	Aircraft Malfunction: Extensive/Uncontained Engine Failure
	Aircraft Malfunction: Gear / Tire
	Maintenance Events
Environmental Threats	Wildlife/Birds/Foreign Object
	Meterology: Thunderstorms
Procedural Errors	SOP Adherence / SOP Cross-verification
Aircraft Handling UAS	Unnecessary Weather Penetration
Org Latent Conditions	Design
	Regulatory Oversight
	Safety Management

The third top accident category is LOC-I. According to accidents statistics analysis conducted by Boeing, for the priod between 1987 and 2010 for the Middle East Region, LOC-I accidents have resulted in the highest rate of fatalities among all accidents categories;



Source: Boeing

4.1.2 Regional Information

4.1.2.1 Reporting Culture and Accidents in the Middle East Region

Performance based regulation demands a national aviation authority with safety data collection tool capability and high industrial expertise.

For an SMS/SSP system to be effective, a sound reporting system and safety culture are required.

A sound safety culture has the following components;

- Information:
  People are knowledgeable about the human, technical and organizational factors that determine the safety of the system as a whole.

- Flexibility:
  People can adapt reporting when facing unusual circumstances, shifting from the established mode to a direct mode thus allowing information to quickly reach the appropriate decision-making level.

- Willingness:
  People are willing to report their errors and experiences.

- Accountability:
  People are encouraged (and rewarded) for providing essential safety-related information. However, there is a clear line that differentiates between acceptable and unacceptable behaviour.

- Learning:
  People have the competence to draw conclusions from safety information systems and the will to implement major reforms.

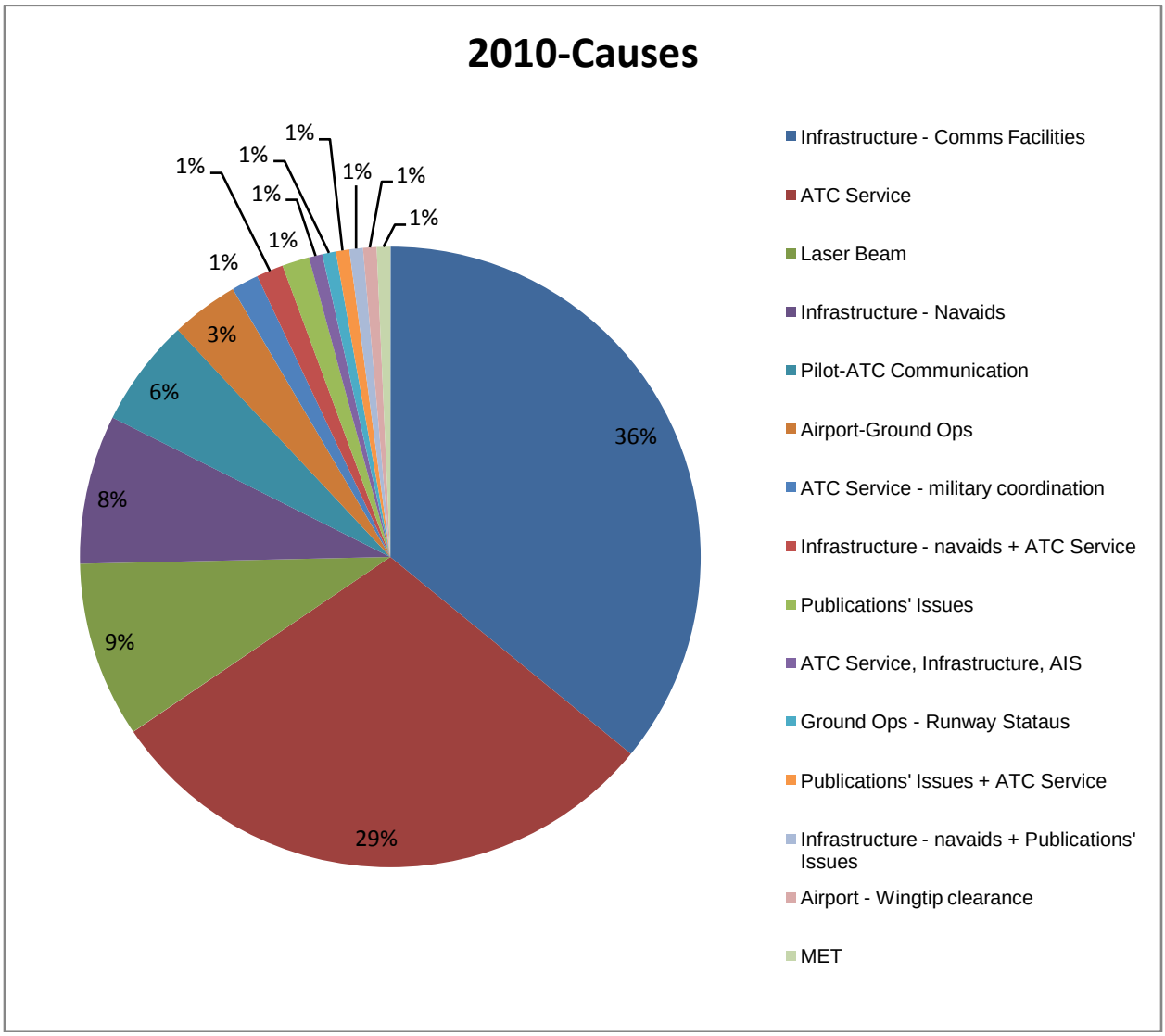
In the Middle East, safety culture and voluntary reporting are being encouraged and implemented by States, airline operators, and airports. The following shows the resulting analysis and information from data collected through reporting processes either by States, or by airlines operators.

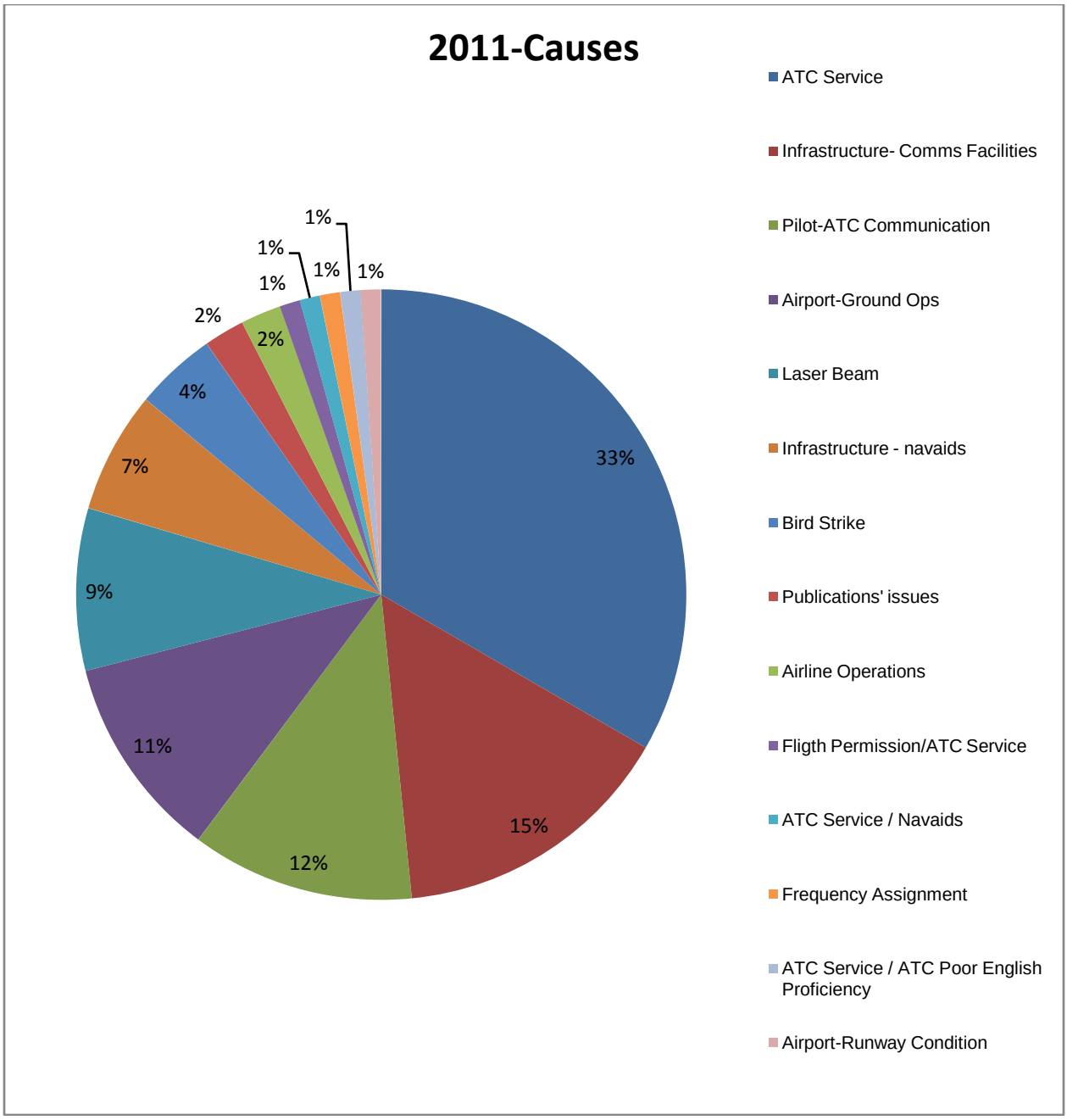
4.1.2.2 ICAO ECCAIRS Database Analysis

(TBI)

4.1.2.3 Incidents Reporting Analysis – IATA Statistics

On regular basis, IATA received ATS Incidents reported by regional and non-MID operators, which are addressed to the respective authorities. An overview of these reported incidents and their causes are reflected in the following graphs:





4.1.2.4 Report on Safety Culture and Incidents from Airlines

A survey was launched among participating airlines in the RASG to identify the following:

- Top 5 reported incidents/occurrences by crew.
- Root causes and contributing factors.

Response was received from two airlines only. The top reported incidents/occurrences by crew, collectively are;

1. Unruly and disruptive passengers
2. ATC service standards and ATC infrastructure
3. Ramp and terminal management, and loading errors
4. Unstablized approached; and

5. Runway excursions

The common contributing factors, or root caused identified for the reported incidents/occurrences are;

1. Lack of staff awareness
2. Lack of training
3. SOP non-compliance or deviation
4. In-availability of the required infrastructure, such as ATC communications facilities, or bird control programs

4.1.2.4 Report on Safety Culture and Incidents from States

(TBI)

4.1.3 Main findings

4.1.3.1 Analysis of Contributing Factors to Accidents in the MID Region Regions (IATA)

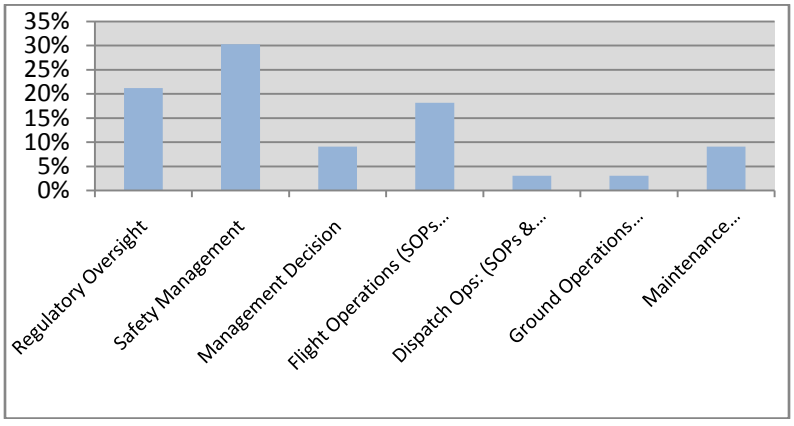
This section presents an in-depth analysis of the **2008-2011 IATA recorded accidents** for the MID Region to identify common issues that can be shared by operators and States to develop suitable prevention strategies.

- No occurrences involving foreign operators in MID region in 2011
- 2009 reported the highest number of accidents involving MID operators
- The highest number accidents occurred in Iran
- Runway & Ground Safety, In-flight Damage, and Loss of Control - Inflight are the biggest safety challenge for MID region
- Deficient safety management on part of the operator was cited
- Weak Regularity oversight on part of the state was also cited as a factor in many of the accidents
- Operating in adverse weather was deemed to be a problem
- Inadequate Airport facilities cited as a contributing factor

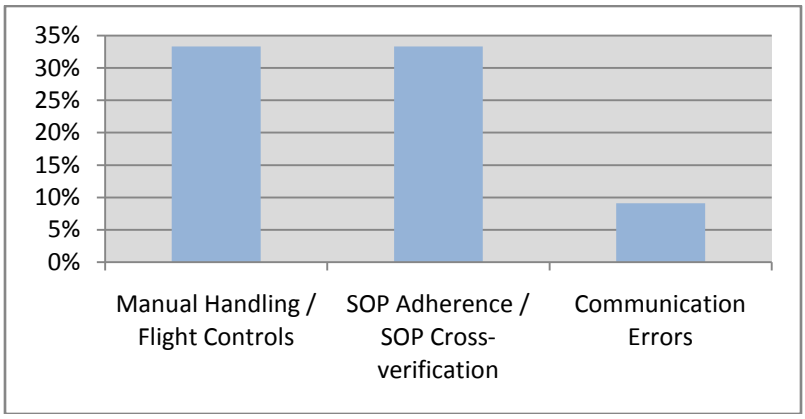
In this case, IATA established the following correlations of interest:

Contributing Factors

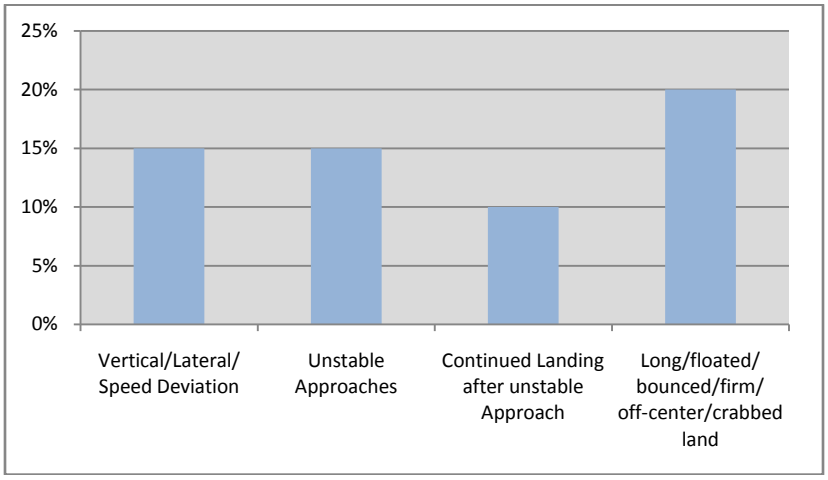
1. **Top Latent Conditions**



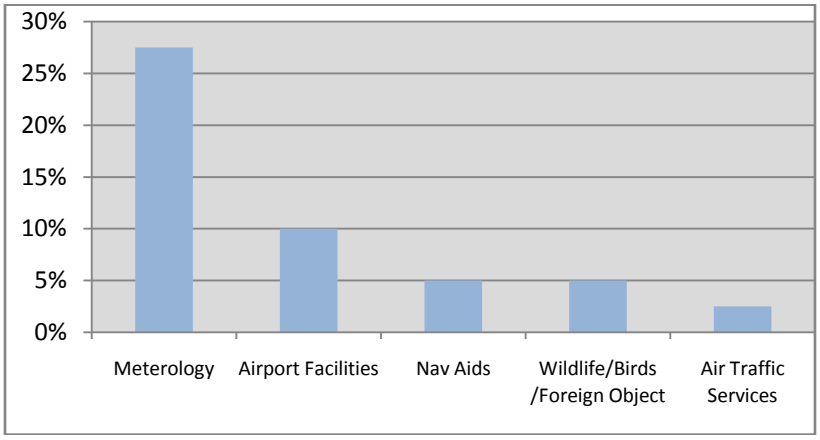
2. Top Flight Crew Errors



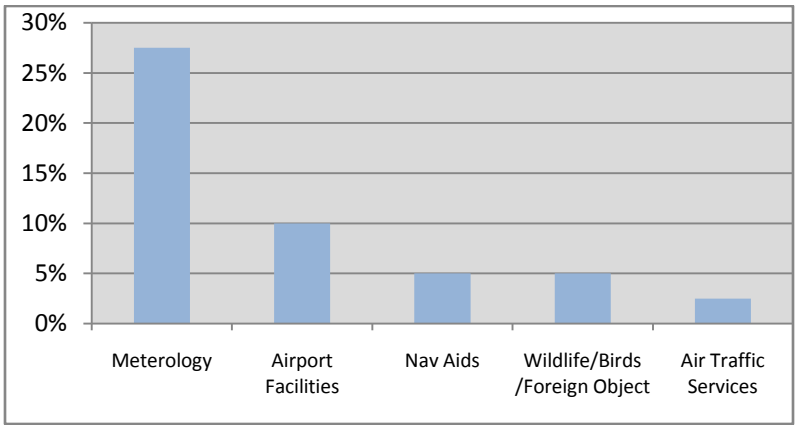
3. Top Undesired Aircraft State



4. Top Environmental Threats



5. Top Airline Threats



- All contributing factors analysis is based on the 33 accidents
- Accidents were analyzed to determine contributing factors:
  - Flight Crew Errors involved in the accident
  - Environmental (operational environment)
  - Organizational (the airline threat involved in the accident)
  - Undesired Aircraft State

4.1.3.2 Most Frequent Categories

As observed under section 4.1.1 of this report, the top three fatal accident categories for the MID Region are Runway & Ground Safety, In-flight Damage, and Loss of Control - Inflight.

As explained at the beginning of this chapter, any safety management process depends on the quantity and quality of information. Thus, reactive information that resulted from accident investigations became extremely important for improving safety. Further analysis should be conducted to determine and propose means to facilitate the achievement of the Global Aviation Safety Plan (GASP) GSI # 4 objective *to implement effective incident and accident investigations* and, consequently, reduce the number of "unknown" categorised occurrences.

4.1.3.2.1 In-depth Analysis of Runway and Ground Safety Data

(TBI)

4.1.3.2.2 In-Depth Analysis of In-flight Damage Data

(TBI)

4.1.3.2.3 In-Depth Analysis of Loss of Control In-flight (LOC-I) Data

(TBI)

4.2 Proactive Safety Information

This section contains safety information that can be categorized as proactive, such as ICAO USOAP statistics and some trends from the IATA IOSA.

4.2.1 ICAO Universal Safety Oversight Audit Programme Continuous Monitoring Approach (USOAP CMA)

ICAO Critical Elements of a safety oversight system

The **eight ICAO Critical Elements** (CEs) are essentially the safety defence tools of a State's safety oversight system required for the effective implementation of safety-related international standards and associated procedures. Each ICAO Member State, in its effort to establish and implement an effective safety oversight system that reflects the shared responsibility of the State and the aviation community, should address all CEs, which cover the entire spectrum of civil aviation activities, including personnel licensing, aircraft operations, airworthiness, air navigation services, aerodromes and aircraft accident and incident investigation. The level of effective implementation of the CEs is an indication of a State's capability to provide safety oversight. The CEs are presented in figure 4.31:

Figure X- ICAO Critical Elements (CEs) of a Safety Oversight System

The results of the ICAO Universal Safety Oversight Audit Programme (USOAP) are also presented to show the lack of effective implementation (LEI) by States in reference to the eight critical elements above referred, that ICAO considers essential for a State to establish, maintain and improve in order to have an effective safety oversight system.

In the MID Region, the Lack of Effective Implementation (LEI) of the 8 Critical Elements (CEs) of Safety Oversight for the 13 audited MID States[2] averages 36.03%. The highest LEI is related to CE4 (59.22%) which is Qualification and Training of Technical Staff involved in carrying out regulatory functions, while the second highest LEI is related to CE8 (43.24%) which is the Resolution of Safety Concerns as shown in Figure X.

Note.- All the statistical information presented in the following pages (Figures X to Y) reflects the level of Lack of Effective Implementation (LEI) at the moment of the USOAP Audits (2005-2010). The improvement in LEI rates could be reflected during the ICAO Coordinated Validation Missions (ICVMs) under the new CMA concept.

Figure X – Lack of Effective Implementation (LEI) per Critical Element (CE)

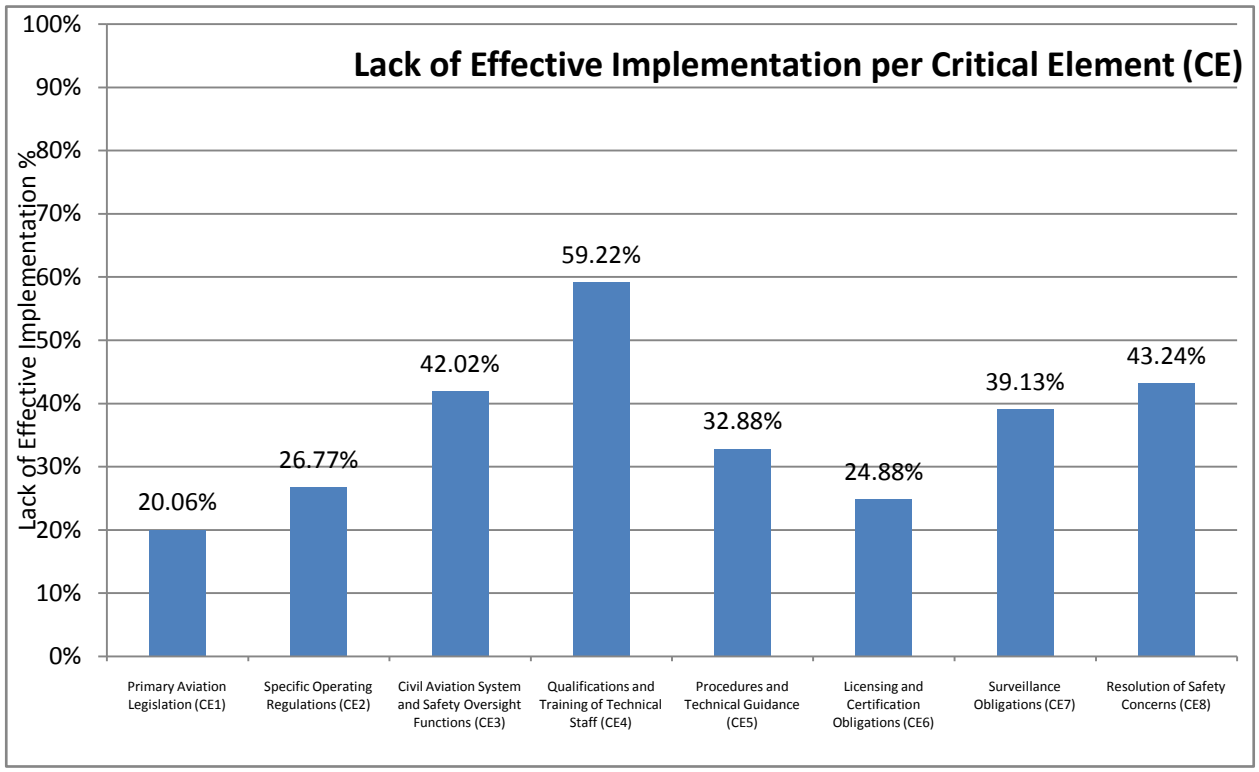
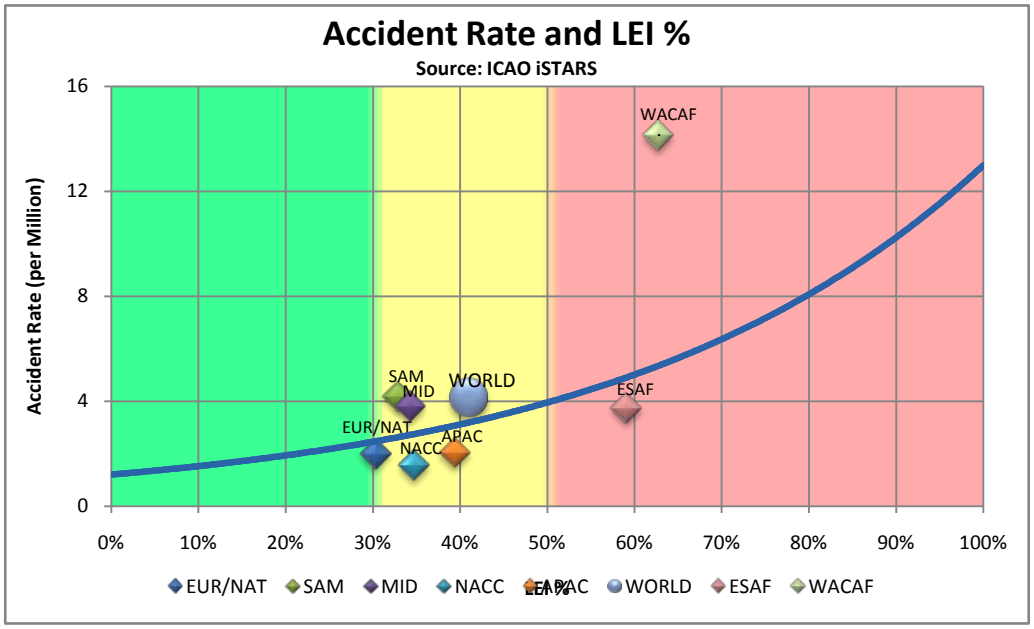


Chart X shows the accident rate by region with respect to their LEI percentage. For the accident rate, only commercial scheduled flights were taken into account, including passenger and cargo flights. Accidents are as defined by Annex 13, including fatal and non-fatal accidents.

[2] 13 MID States only have been audited. Iraq and Yemen have not yet been audited

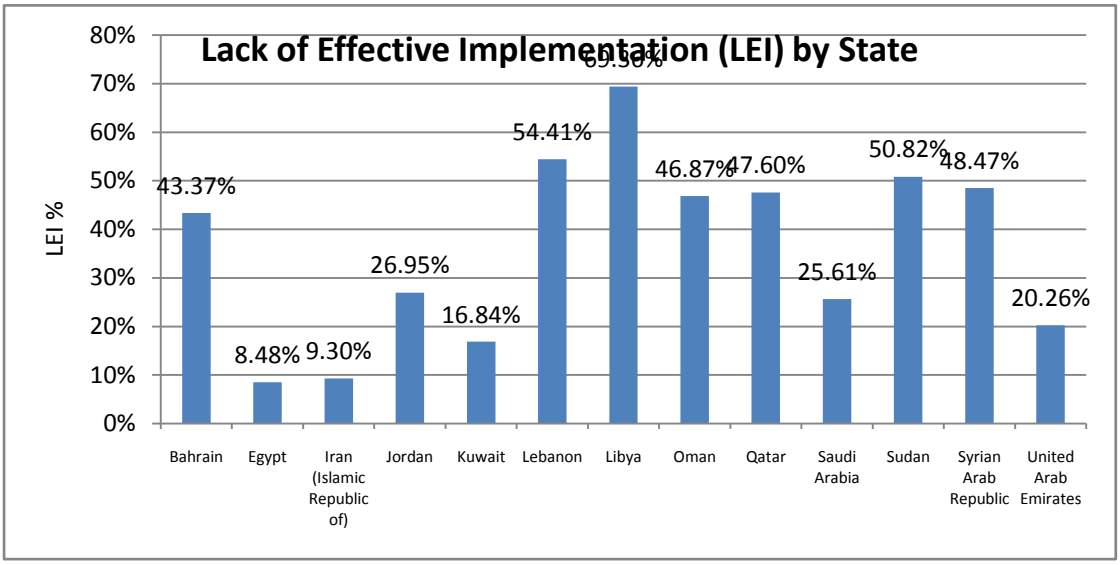
Figure X - Accident Rate and LEI percentage



According to these criteria, the MID Region presented a lack of effective implementation (36.03) **below** the world average (40.15%). However, the Accident rates in the MID Region (...) remained **above** the world average (...).

Figure X shows a more detailed distribution of the percentage of lack of effective implementation per State in the MID Region.

Figure X - USOAP - Lack of Effective Implementation (LEI) by State

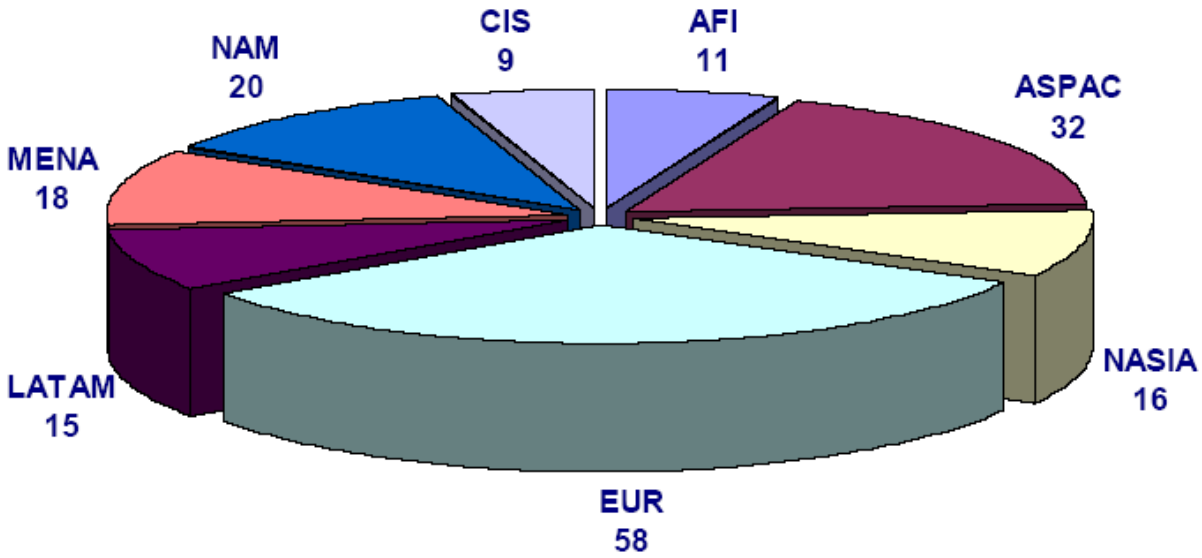


The average LEI in the MID Region is 36.03%, and more than half of the States audited (7 States) show a LEI percentage above 30%. According to ICAO, States should target their efforts to reduce and maintain the lack of effective implementation in the green area (below 30% LEI).

The following scatter plot (Figure X) shows a comparison between lack of effective implementation by State and traffic volume (departures by State) in 2011.

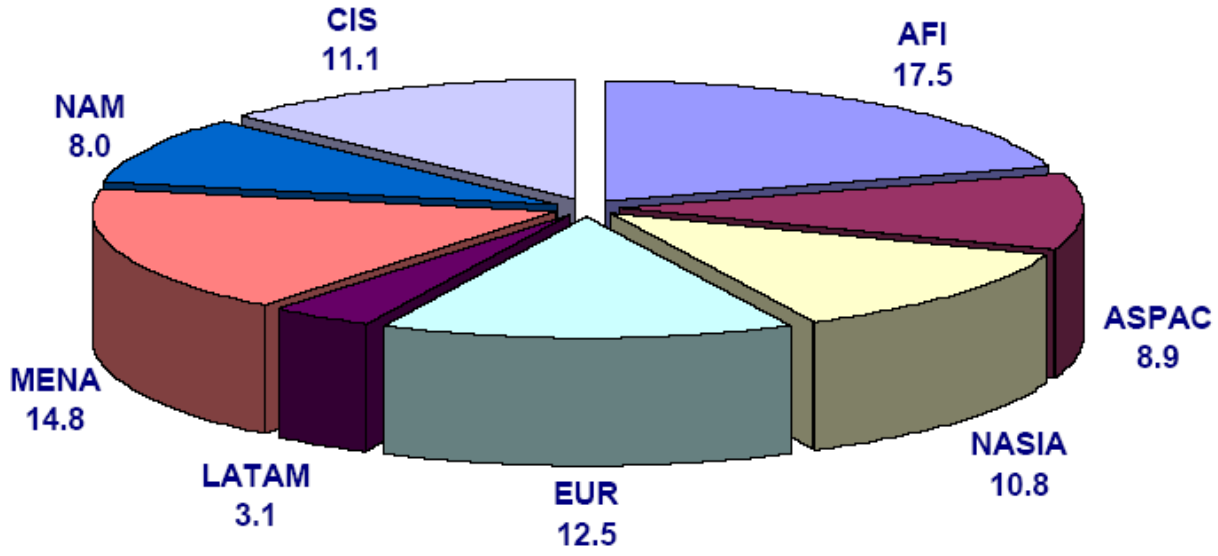
Figure X - LEI % v. Departures by State

4.2.2 IOSA MID Region Summary

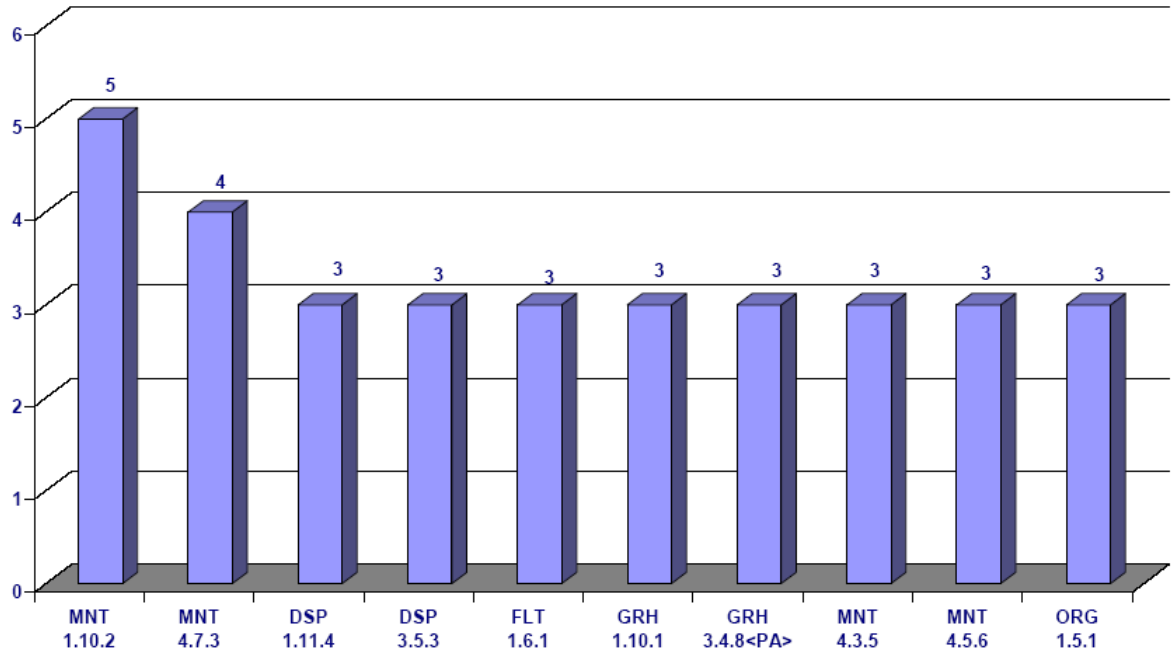


4.2.2.1 Findings in the Middle East Region

4.2.2.1.1 Average Findings per Audit by Region



4.2.2.1.2 Top Findings in MID Region



4.2.3 Line Operations Safety Audit (LOSA)

(TBI)

4.3 Predictive Safety Information

Until the end of 2010, the Middle East Region had not yet fully developed mechanisms for gathering and processing predictive safety information. However, initiatives are currently underway that will advance capabilities to produce predictive safety information.

Predictive navigation aids do not require a triggering event to take place in order to launch the safety data capture process. Routine operational data are continually captured, in real time. Predictive navigation aids are based upon the notion that safety management is best accomplished by trying to find trouble, not just waiting for it to show up. Therefore, predictive safety data capture systems aggressively seek safety information that may be indicative of emerging safety risks from a variety of sources.

Predictive safety data collection systems are essentially statistical systems, whereby a considerable volume of operational data, which alone are largely meaningless, are collected and analysed, and combined with data from reactive and proactive safety data collection systems. The aggregation of data thus leads to the development of a most complete intelligence that allows organizations to navigate around obstacles and currents and position themselves optimally within the drift. Hazard reporting systems, flight data analysis and normal operations monitoring are examples of predictive navigation aids.

Predictive safety data capture systems, strategies and methods operate quite close to the origin or point of inception of the practical drift. This is a very high level of intervention and a highly efficient one. The reason for the high efficiency of predictive safety data capture systems, strategies and methods is two-fold: on the one hand, they deal with hazards when they are in their infancy, have had no opportunity to start developing their damaging potential, and are therefore easier to contain. Because of this, the mitigations developed from predictive safety data turn into containment nets or filters of such tightness that they almost totally block the passage of emerging hazards further down the continuum of the practical drift.

The Aviation Safety Report Team (MID Region) believes that SMS processes have been in place with some of the major players in the region. With this mature SMS in place comes a wealth of data available to initiate

and develop predictive reporting process which will go long way in improving aviation safety in the region. One good source for predictive data is DFDR data.

DFDR Trends: Most of the states in the region require the operators to establish and maintain a Flight Operations Quality Assurance Programme (FOQA) also called the Flight Data Monitoring Programme. Routine DFDR is downloaded and processed to identify operational risks. These trends are a very good source for identifying predictive risks.

The ASRT will consider in the future collating available DFDR trend data from all states with the intention of identifying the top risks.

For example, since it is well understood that a majority of Runway Excursions result from Unstable approaches, the ASRT can work towards the root cause for such unstable approach in the region. Following areas could be considered to mitigate this threat:

- Proactive Flight Crew Training which helps crew to identify an Unstable approach
- No jeopardy go-around policy
- Uniform Stabilisation Criteria
- Airfield topography
- ATC procedures
- Weather conditions
- Long Flare and Long touchdown
- Type of approach and landing aids

Following Safety Indicators can be set to reduce unstable approaches, CFIT and long landings:

- Airspeed on final approach below 1000 feet and < 500 feet
- Rate of Descent below 1000 feet
- Late setting of landing flap configuration below 1000 and < 500 feet
- Landing Flare (Long Landing) (>900m)
- Go-around trends
- Use or non-use of reversers after landing
- Tailwind landing statistics

Since most of the operators in the region have similar type of operations data collected and analysed will have similar trends and will be useful to all the states.

The other areas of predictive reporting that can be considered are:

- **Crew Fatigue data**
- **Similar Call Sign**
- **LOSA or similar flight deck observations**
- **Airspace congestion**

5 Final Conclusions

(TBI)

List of Acronyms

CREDITS

RASG-MID thanks the members of the RASG-MID Annual Safety Report Team (ASRT) that contributed to the elaboration of this RASG-MID Annual Safety Report:

RASG-MID:

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