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MID Region Annual Safety Report

Ninth Edition 2020

Reference Period (2015 - 2019)

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Foreword

The Regional Aviation Safety Group-Middle East (RASG-MID) was established in September 2011 to develop an integrated, data-driven strategy and implement a work program that supports a regional performance framework for the management of Safety.

RASG-MID supports the implementation of the ICAO Global Aviation Safety Plan (GASP) and the achievement of the Safety Targets in the MID Region Safety Strategy. The RASG-MID membership includes representatives from ICAO, MID States, and international organizations.

RASG-MID consists of four main teams: The Annual Safety Report Group (ASRG), the Aerodrome Safety planning and Implementation Group (ASPIG), the Safety Enhancement Initiative Group (SEIG), the Aircraft Accident and Incident Investigation Group (AIIG). The Annual Safety Report Group (ASRG) is in charge of collecting and analysing safety information. The Group is also responsible for the identification of the main safety risks, MID region safety priorties and the production of the RASG-MID Annual Safety Report (ASR).

The RASG-MID Annual Safety Report is a timely, unbiased, and transparent source of safety-related information essential for all aviation stakeholders interested in having a tool to enable sound decision-making on safety-related matters.

Executive Summary

Over the last five years, the global scheduled commercial international operations accounted for approximately 38.4 million departures in 2019, compared to 32.9 million departures in 2015. The MID Region shows a slight decrease in traffic volumes during 2019. Total scheduled commercial departures in 2019 accounted for approximately 1.31 million departures compared to 1.22 million departures in 2015. In terms of an aircraft accident, the MID Region had an accident rate of 1.5 accidents per million departures in 2019, which decreased compared to the previous year (2018). The 5-year average accident rate for 2015-2019 is 2.02, which is below the global average rate (2.6) for the same period. The MID Region accident rate in 2019 is still below the global accident rate, which is 3.0 accidents per million departures.

The 5-year average fatal accident rate for 2015-2019 is 0.61, which is slightly above the global average rate (0.44) for the same period. The MID Region had no fatal accidents in 2017 and 2019. However, four fatal accidents occurred in 2015, 2016, and 2018. The 2015 accident caused 224 fatalities, 67 were registered in 2016, and the year 2018 caused 66 fatalities.

MID Region Safety Priorities

One of the GASP goals is for States to improve their effective safety oversight capabilities and to progress in the implementation of SSPs. Thus, GASP calls for States to put in place robust and sustainable safety oversight systems that should progressively evolve into more sophisticated means of managing Safety. In addition to addressing organizational issues, GASP addresses high-risk categories of occurrences, which are deemed global safety priorities. Therefore, regional operational safety risks, organizational issues, and emerging risks are defined to support and improve the development of Safety Enhancement Initiatives (SEIs) which would be detailed in the 1st MID Region Aviation Safety Plan (RASP).

A. Regional operational safety risks

Operational safety risks arise during the delivery of a service or the conduct of an activity (e.g., operation of an aircraft, airports, or air traffic control). Based on the analyses of reactive and proactive safety information, it is concluded that the regional operational safety risks for the MID Region are:

1. Loss of Control-In Flight (LOC-I);
2. RE and ARC during landing;
3. Controlled Flight into Terrain (CFIT);
4. Mid-Air Collision (MAC); and
5. Runway incursion

In addition to this, main safety isuses have been identified and their potential accident outcomes.

B. Organizational issues

Organizational issues are systemic issues which take into consideration the impact of organizational culture, and policies and procedures on the effectiveness of safety risk controls.

States' Safety Oversight capabilities

USOAP-CMA audits had identified that State's inability to effectively oversee aviation operations remains a global concern. In respect of the MID Region, the regional average overall Effective Implementation (EI) (13 out of 15 States have been audited) is 75.59 %, which is above the world average 68.39 % (as of May 5, 2020). Three (3) States are currently below EI 60%. All eight area**s** have an EI above 60%. However, the areas of AIG and AIG still need more improvement. Regarding the Critical Elements (CEs), CE4 (Qualified technical personnel) improved and is above 60% (60.08%) EI, whereas CE8 (resolution of safety issues) is the only one below EI 60% (59. 47%) EI.

Moreover, the effective implementation in certification, surveillance, and resolution of Safety concerns need to be improved.

Safety Management

States should build upon fundamental safety oversight systems to fully implement SSPs according to Annex 19; States shall require that applicable service providers under their authority implement an SMS. The average EI for SSP foundation PQs for States in the MID Region is 76, 21%.

Implementation of SSP is one of the main challenges faced by the State in the MID Region. The RASG-MID addresses the improvement of SSP implementation in the MID Region as one of the top Safety Enhancement Initiatives (SEIs). Currently, States in the MID Region could not reach to full implementation of the SSP framework. Common challenges/difficulties have been identified based on the States feedback, and recommendations for the way forward were provided in this regard. In connection with this, the RSC/7 endorsed the MID Region Safety Management Implementation Roadmap and the establishment of the Safety Management Implementation Team (SMIT) to support MID States in the implantation of the SSP effectively and efficiently. Moreover, the RASG-MID also supported the establishment and activation of the MENA RSOO, with a primary objective to assist member States in developing and implementing SSP; and Several Safety Management Workshops, training courses, and meetings have been organized to support the implementation of SSP/SMS and address the challenges and difficulties, as well as sharing of experiences and best practices.

C. Emerging Safety Risks

Emerging safety issues are risks that might impact Safety in the future. These may include a possible new technology, a potential public policy, a new concept, a business model or idea that, while perhaps an outlier today, could mature and develop into a critical mainstream issue in the future or become a major trend in its own right.

GNSS Outages/ Vulnerability

Between 2015 and 2018, GPS outages accounted for 92 reported incidents. Air operators reported the most frequent GNSS outages problems. The reports were mainly located in the FIR Middle East-Europe. The majority of GPS outages were closely linked with political conflict in the region. The most affected geographical area was Eastern Mediterranean related to the political conflict in the region.

COVID-19 pandemic outbreak

It was noted that the rapidly evolving COVID-19 crisis heavily affected all aspects of civil aviation. The urgent need to coordinate all efforts to reduce the risks of the spread of COVID-19 by air transport and to protect the health of air travellers and aviation personnel, while maintaining essential aviation transport operations and ensuring an orderly return to normal operations in due course was underlined. In connection with this, the High-Level MID Regional Meeting/Teleconference between ICAO, AACO, ACAO and IATA on COVID-19 Crisis Management came out with a proposal to establish a MID Region Recovery Plan Task Force (RPTF) which was then endorsed by the Middle East DGCA Meeting/Teleconference held on April 23, 2020. The RPTF established 4 technical work streams namely: Public Health Requirements, Operational Safety Measures, Airport & Passengers Facilitation, and Air Navigation Services/Air Traffic Management. Each work stream identified key atctvies and their respective actions and deliverables/outcomes.

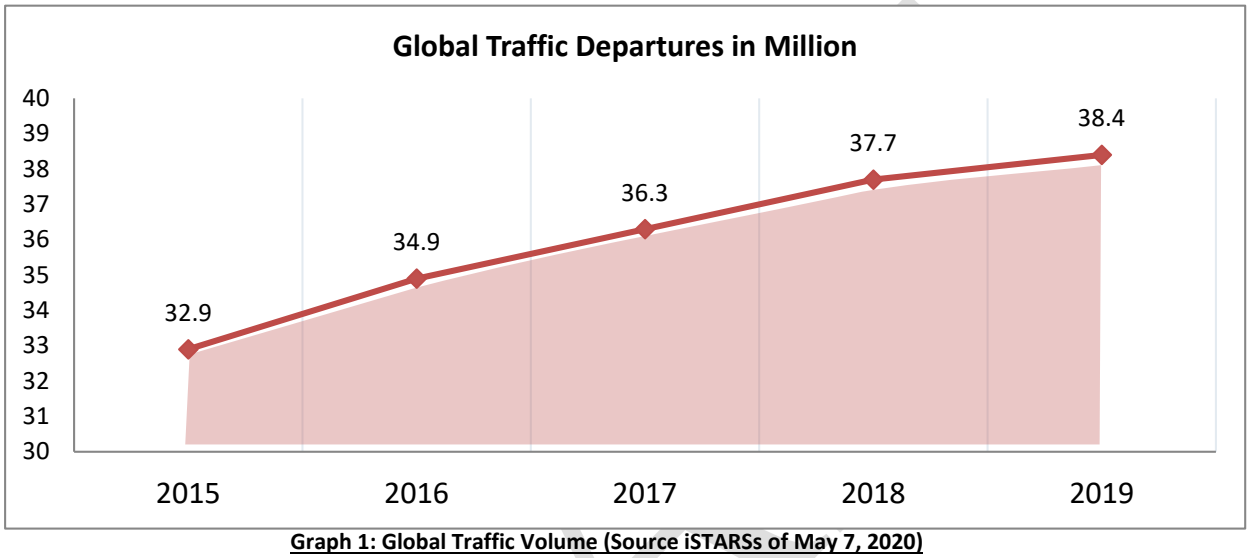
In line with GASP 2020-2022, the 1st MID RASP edition is being drafted to facilitate communication and understanding with all regional and external stakeholders and to develop Safety Enhancement

Initiatives (SEIs) in order to address the MID Region safety priorities defined in the Regional Annual Safety Report including organizational issues, regional operational safety risks, and emerging risks.

1.Traffic Volumes

1.1 Global Traffic

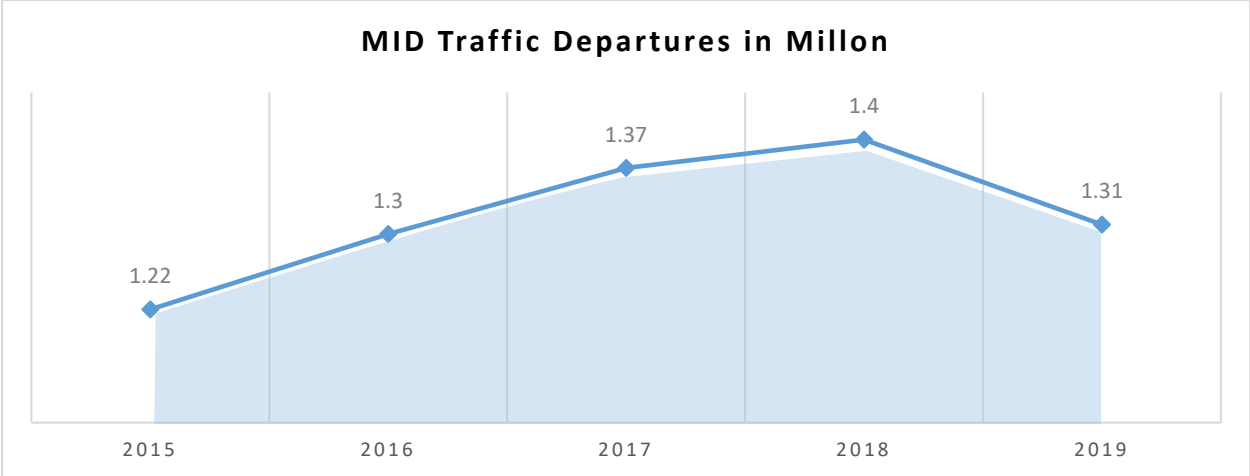
The global scheduled commercial international operations accounted for approximately 38.4 million departures in 2019, compared to 32.9 million departures in 2015.



Graph 1: Global Traffic Volume (Source iSTARSs of May 7, 2020)

1.2 MID Traffic

The MID Region shows a slight decrease in traffic volumes during 2019. Total scheduled commercial departures in 2019 accounted for approximately 1.31 million departures compared to 1.22 million departures in 2015.



Graph 2: MID Traffic Growth (Source iSTARSs of May 7, 2020)

2. Reactive Safety Information

2.1 Safety Risk Assessment Methodology

To facilitate the identification and prioritization of the main Regional Safety Operational Risks, accidents are categorized in terms of frequency and severity and the serious incidents in terms of frequency. The severity assessment is based on fatalities, injuries, and damage to aircraft, property, and equipment. (For Frequency rating: 1 is the most frequent, and six is the least frequent. For Severity: 1 is the most severe and four is the least severe)

The MID ASRT/2 meeting (Cairo, Egypt, 4-5 February 2018) agreed to the following improvements to the methodology used for risk assessment:

a) improvement of the current risk matrix used for the identification of Regional operational risks (four (4) levels of severity instead of three (3)), as follows:

improvement of the current risk matrix used for the identification of focus areas (four (4) levels of severity instead of three (3)), The level of severity is categorized as follows:

1) Catastrophic: multiple deaths; serious damage to aircraft/equipment (destroyed)
2) Major: serious injury/fatalities; major aircraft/equipment damage
3) Minor: little consequences (minor injuries, minor damage to aircraft);
4) No potential damage or injury

Frequency / Severity	1	2	3	4	5	6
1	1	2	3	4	5	6
2	2	4	6	8	10	12
3	3	6	9	12	15	18
4	4	8	12	16	20	24

Table 1 Risk matrix

b) Adoption of the "feared consequences" of the risk portfolio of DGAC France:

Table2 below shows that each identified Undesirable event/safety issue is linked to the potential accident outcome.

NB	Identification of Undesirable Event	Potential Accident outcome						
		CFIT	LOC-I	MAC	Ground Collision	RE	Damage to aircraft or injury inflight	Damage to aircraft or /injury on ground
UE.1	Unstabilised or non-compliant approach	X	X			X		X
UE.2	Abnormal airplane attitude (Roll, pitch, speed…)		X				X	
UE.3	Events relating to aerodrome conditions (Runway surface condition and aerological parameters)		X			X	X	X
UE.4	En-route encounter of dangerous weather phenomena (Thunderstorm, turbulence, Icing)		X	#			X	X
UE.5	Misuse of aircraft system (Weight and Balance, speed track, aircraft config)	X	X	X	X	X	X	X
UE.6	Event pertaining to works/maintenance operations on or close to a runway		#		X	X		X
UE.7	Bad coordination/execution of ground operations (deicing, loading, stowing, line maintenance, etc)	X	X		X		X	X
UE.8	Runway/taxiway incursion				X	X		X
UE.9	Loss of separation in flight/ and/or airspace infringement /level bust		X			X	X	X
UE.10	Wildlife hazard, including bird strike		X		X	X	X	
UE.11	Ground-onboard interface failure (Misunderstanding, unsuitability of transmitted information,etc)	X	X	X	X	X	X	X
UE.12	Aircraft maintenance event	X	X		#	X	X	X
UE-13	Fire/Smoke inflight	#	X				X	X
UE-14	Aircraft system failure resulting in flight management disturbance	X	X			X	X	X
UE-15	Loss of cabin pressure		X	#			X	
UE-16	Aircraft damage due to FOD		X			X	X	X

Table:2 identified Undesirable event/safety issue

2.2 ICAO Data

ICAO's primary indicator of Safety in the global air transport sector is the accident rate based on scheduled commercial operations involving aircraft having a Maximum Take-off Weight (MTOW) above 5700 kg. Exposure data is comprised of scheduled commercial operations that involve the transportation of passengers, cargo, and mail for remuneration or hire and is a preliminary estimate solely for the calculation of the accident rates.

ICAO iSTARS (ADREP et al. and API Data service.) applications contain an aggregation of different accident and incident data sources, including ADREP, Aviation Safety Network, and Aviation Herald, to provide official ICAO accident statistics used for the development of the ICAO Safety Reports. In addition, SISG group final validation accidents data is also used as source of the data analysis.

Note: *The accident data presented here is the official ICAO accident statistics, used for the development of the ICAO safety reports. The data is based on scheduled commercial operations involving aircraft having a Maximum Take-off Weight (MTOW) above 5700 kg (validated or under validation by ICAO). Serious incidents presented here are safety information shared by the MID States.*

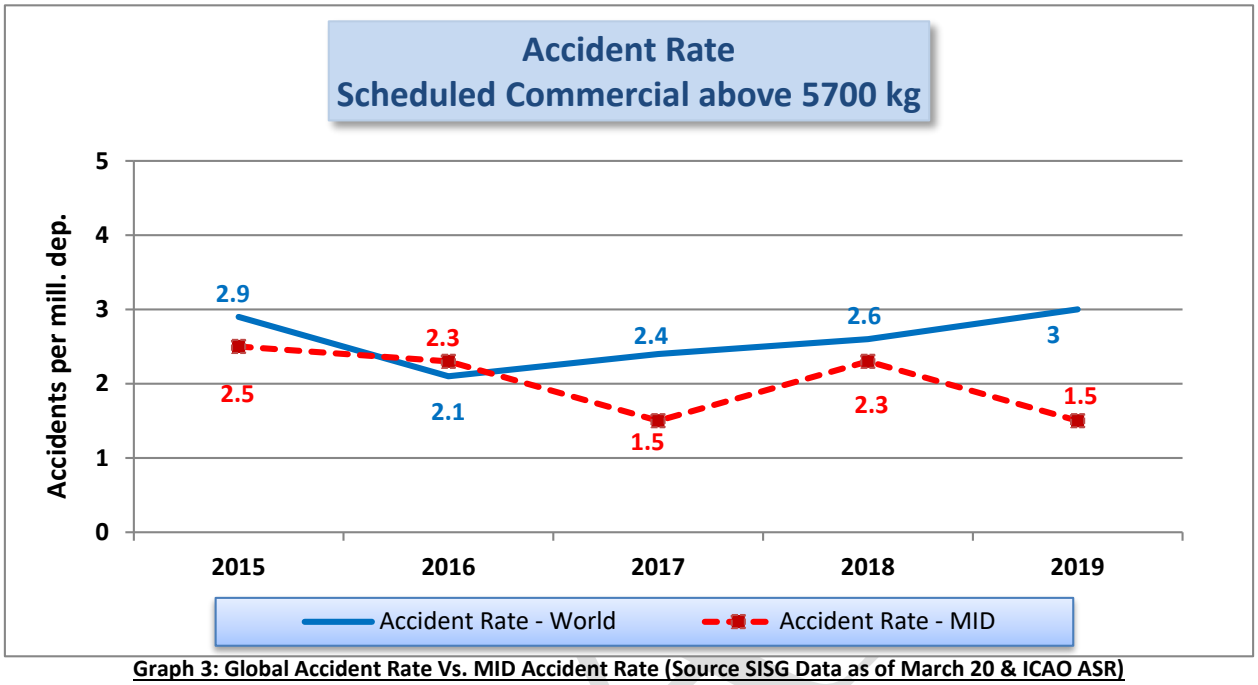
The main part of this section provides an analysis of the accidents that occurred in the MID Region (State of Occurrence) for the period (2015-2019), which is used for monitoring the progress of achieving the Safety Targets in the MID Region Safety Strategy.

Besides, it provides data analysis regarding accidents aircraft registered in the MID Region (State of Registry) as well as for the MID-air operators (State of the Operator) using the same criteria mentioned above. It is to be highlighted that the State of registry and State of the operator Section focuses mainly on counts and percent distribution (no rates).

2.2.1 MID State of Occurrence

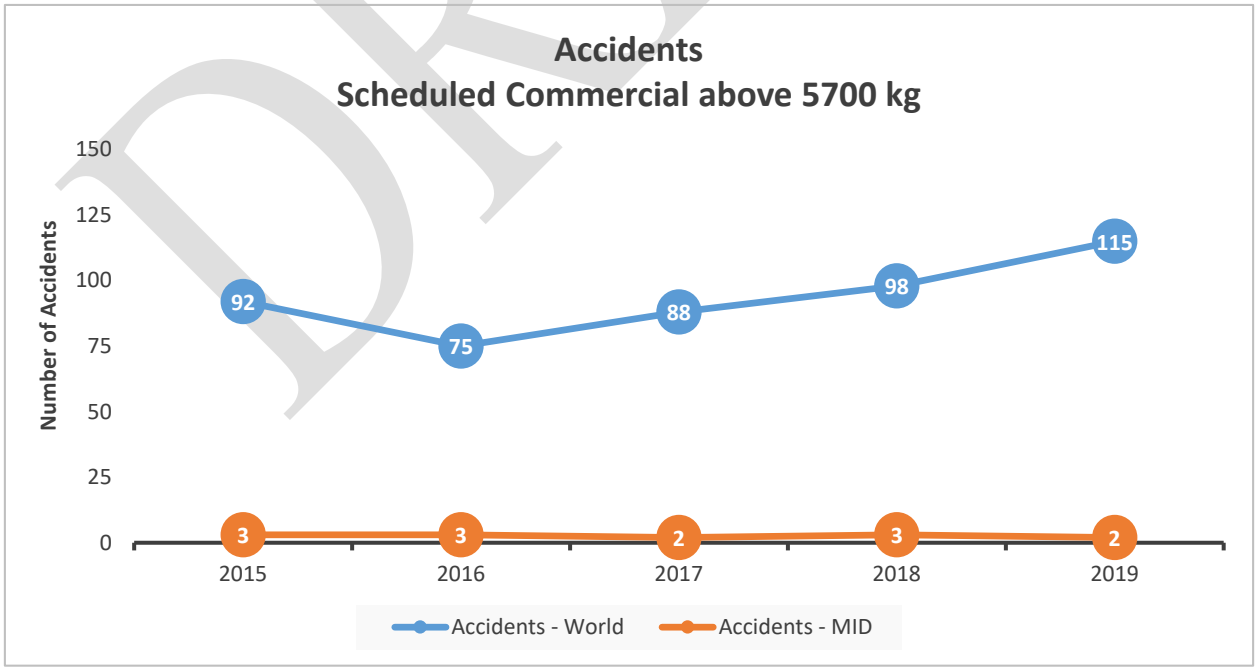
2.2.1.1 Accidents Rates and Fatalities

Graph 3 shows that the MID Region had an accident rate of 1.5 accidents per million departures in 2019, which decreased compared to the previous year (2018). The 5-year average accident rate for 2015-2019 is 2.02, which is below the global average rate (2.6) for the same period.



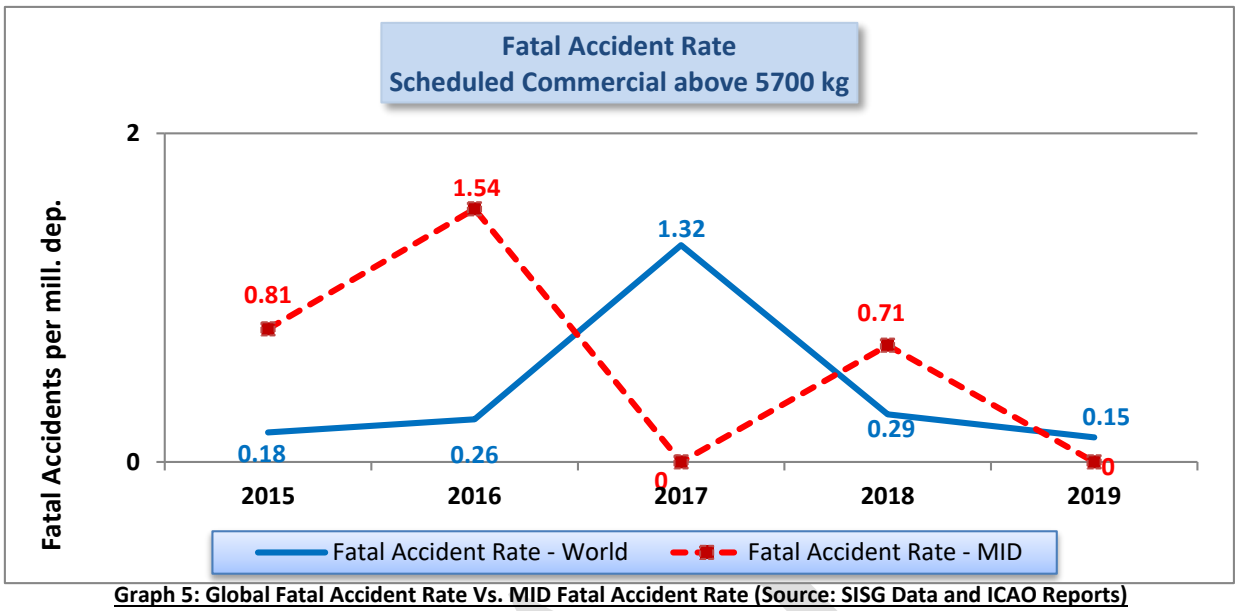
Graph 3: Global Accident Rate Vs. MID Accident Rate (Source SISG Data as of March 20 & ICAO ASR)

Graph 4 shows that 13 accidents occurred in the MID Region during the period (2015-2019), whereas (450) accidents occurred globally.



Graph 4: Number of MID Accidents Vs. Number of Global Accidents Per Year (Source: SISG Data and ICAO Report 2019)

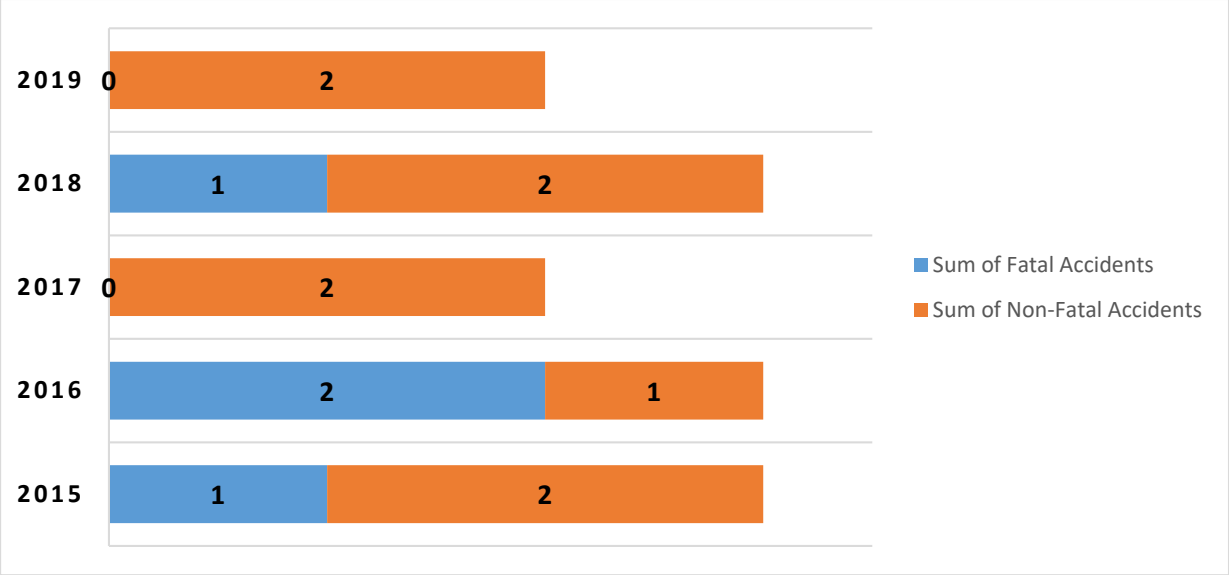
Graph 5 shows that the MID Region had a fatal accident in 2018. However, the 5-year average fatal accident rate for 2015-2019 is 0.61, which is above the global average rate (0.44) for the same period. The MID Region had no fatal accidents in 2017. However, four fatal accidents occurred in 2015, 2016, and 2018. The 2015 accident caused 224 fatalities, 67 were registered in 2016, and the year 2018 caused 66 fatalities, as shown in Graph 6.



Graph 5: Global Fatal Accident Rate Vs. MID Fatal Accident Rate (Source: SISG Data and ICAO Reports)

Graph 6: Number of MID Fatalities Vs. Global Fatalities (Source: ICAO Safety Reports)

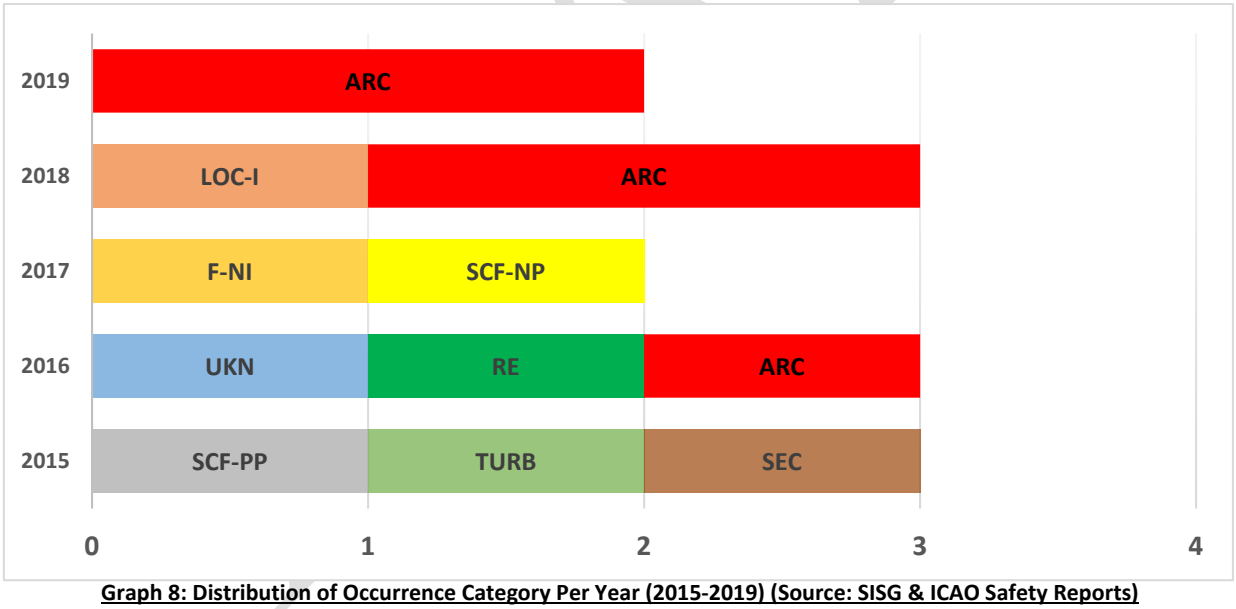
Graph 7 shows that 13 accidents occurred between 2015 and 2019, and no fatal accident occurred during the year of 2019. Four fatal accidents occurred, respectively, during 2015, 2016, and 2018.



Graph 7: Number of Fatal Accidents Vs. Non-Fatal Accidents Per Year (2015-2019) (Source: SISG & ICAO Safety reports)

2.2.1.2 Occurrence Category

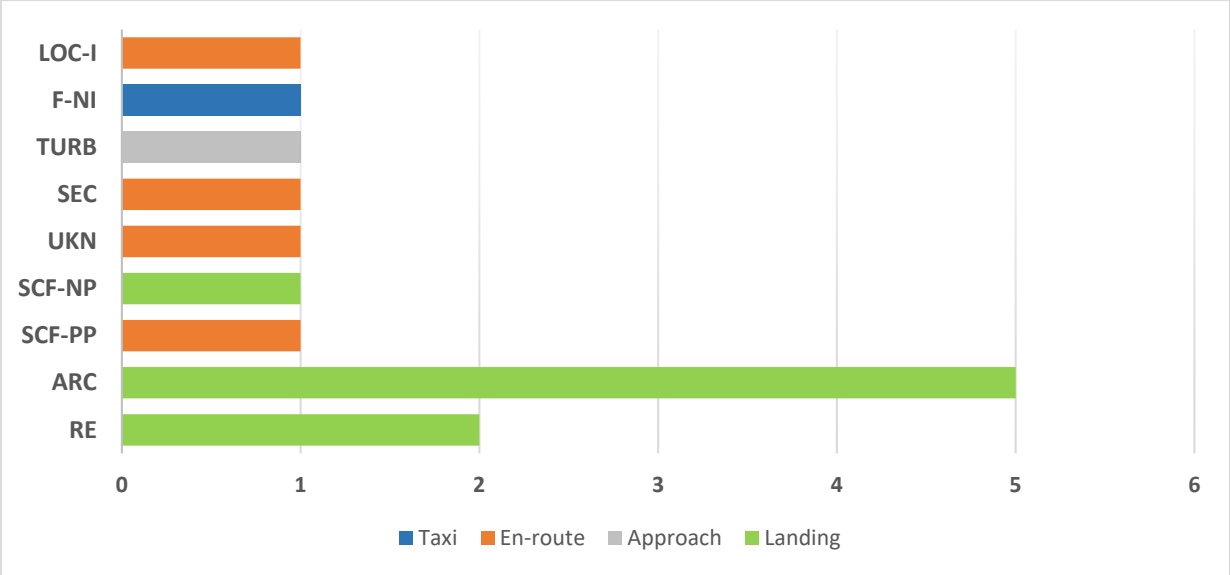
Graph 8 indicates that during the period (2015-2019), CFIT accidents have not been reported. However, the loss of control-inflight (LOC-I), runway excursion (RE), and abnormal runway contact (ARC) events represent the main areas of concern.



Graph 8: Distribution of Occurrence Category Per Year (2015-2019) (Source: SISG & ICAO Safety Reports)

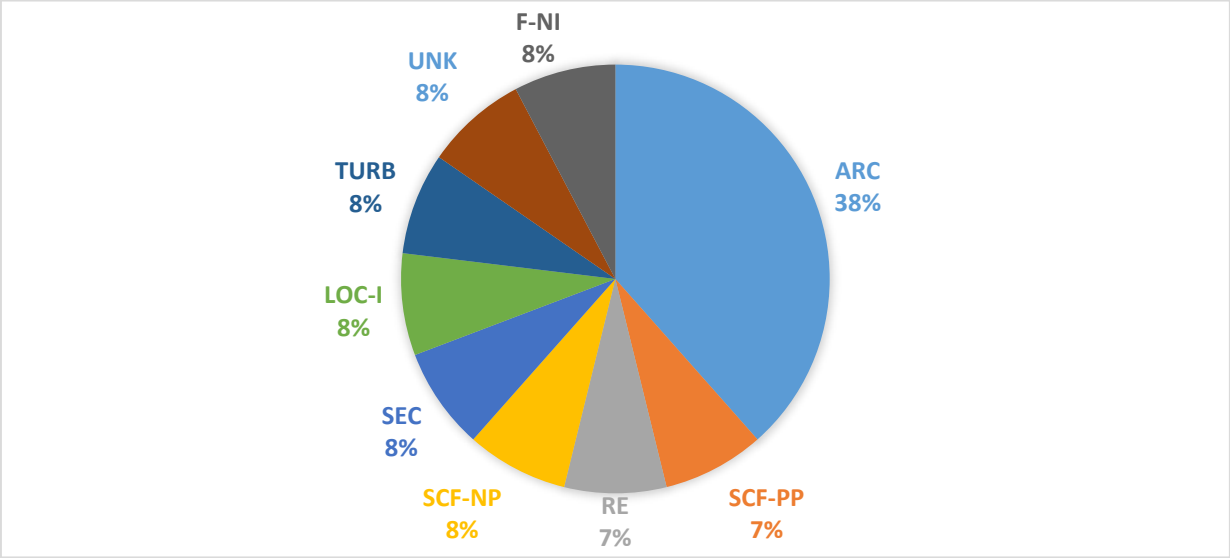
2.2.1.3 Phase of Flight

Graph 9 shows that most accidents occurred during landing phase of flight. The majority of Abnormal Runway Contact (ARC) and Runway Excursion (RE) events took place during landing flight phase. However, one abnormal runway contact accident took place during landing (Go-around) flight phase. The Loss of Control-Inflight (LOC-I) occurred during En-route flight phase.



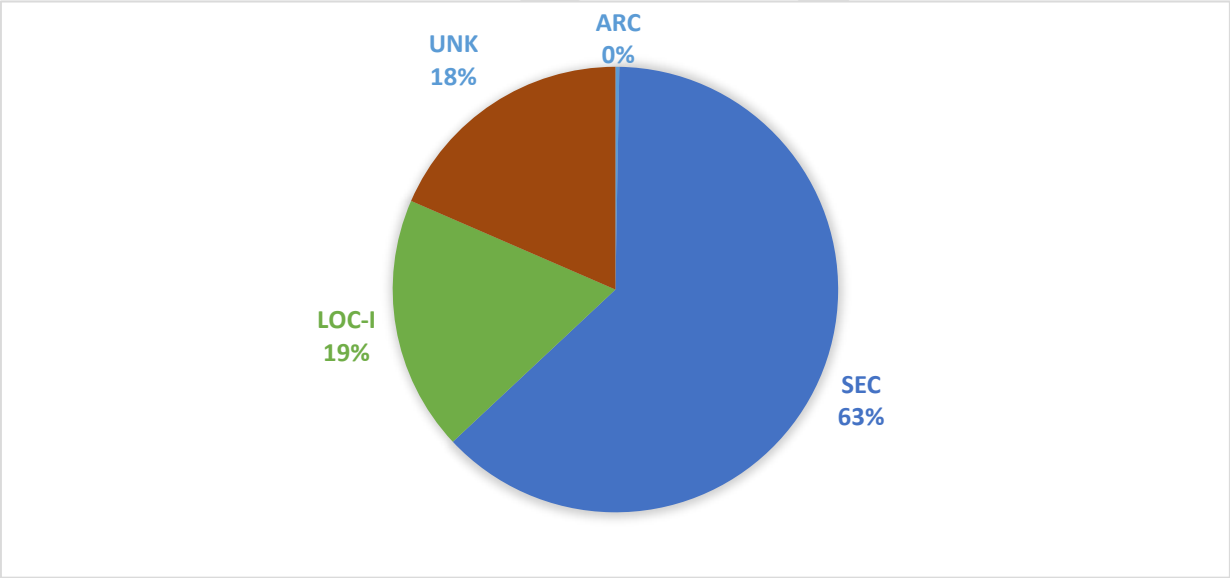
Graph 9: Distribution of Occurrence Category Per Phase of Flight (2015-2019) (Source: SISG & ICAO Reports)

Graph 10 shows that most of the accidents categories experienced during the 2015-2019 were the abnormal runway contact (ARC) and Runway Excursion (RE).



Graph 10: Occurrence Category Distribution as Percentage Per Accident (Source: SISG & ICAO Safety Reports)

Graph 11 shows that the fatalities for the period 2015-2019 were mainly associated to the following Occurrence Categories: Security (SEC), Loss of Control-Inflight (LOC-I), Unknown, and ARC.



Graph 11: Fatalities Distribution as Percentage by Occurrence Category (2015-2019) (Source: SISG & ICAO Safety Reports)

Taking a more in-depth look at the fatal accidents and accidents for the MID Region (State of occurrence) for the period 2015-2019, the following observations are made:

A. In terms of fatality, the top three fatal accidents categories in the MID Region are:
   1. Security – SEC;
   2. Loss of Control-Inflight- (LOC-I); and
   3. Unknown (UNK)

B. In terms of frequency, the most frequent accidents categories in the MID Region (State of occurrence) are:

   1. Runway Safety (RS) – including (RE and ARC);

2. System Component Failure – Power Plant (SCF-PP) and Non-Power Plant (SCF-NP);
3. Fire/Smoke (F-NI); and
4. Turbulence Encounter (TURB)

Identification of the main safety Risk Areas based on the analysis of accident data related to the State of Occurrence (2015-2019)

To facilitate the identification of the safety priority areas; the safety risk assessment methodology is applied.

Main Risk Area	Frequency	Severity	Risk Level
Loss of Control-Inflight (LOC-I)	3	1	3
Runway Safety (RS)	1	3	3
Security (SEC)	3	1	3

Table 3: main Risk Area

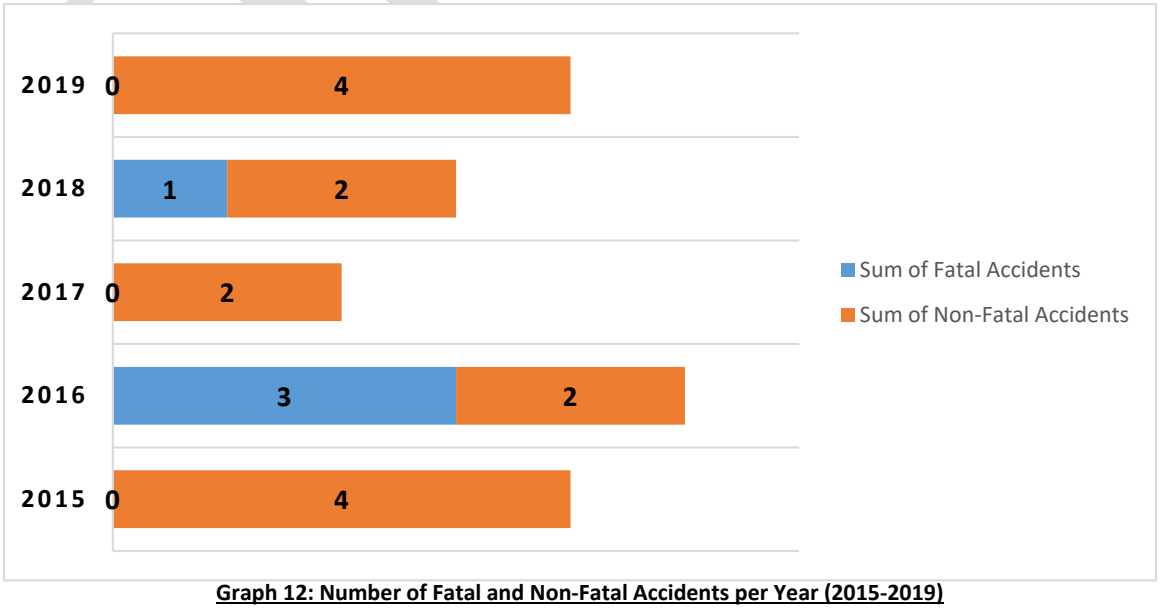
Therefore, the safety risk areas according to the State of occurrence's accidents data are

1. Loss of Control -Inflight – (LOC-I).
2. Runway Safety (RS): Runway Excursion (RE) and Abnormal Runway Contact (ARC) during landing; and
3. Security related-(SEC).

2.2.2 MID State of Registry and Operator

2.2.2.1 Accident Data Analysis

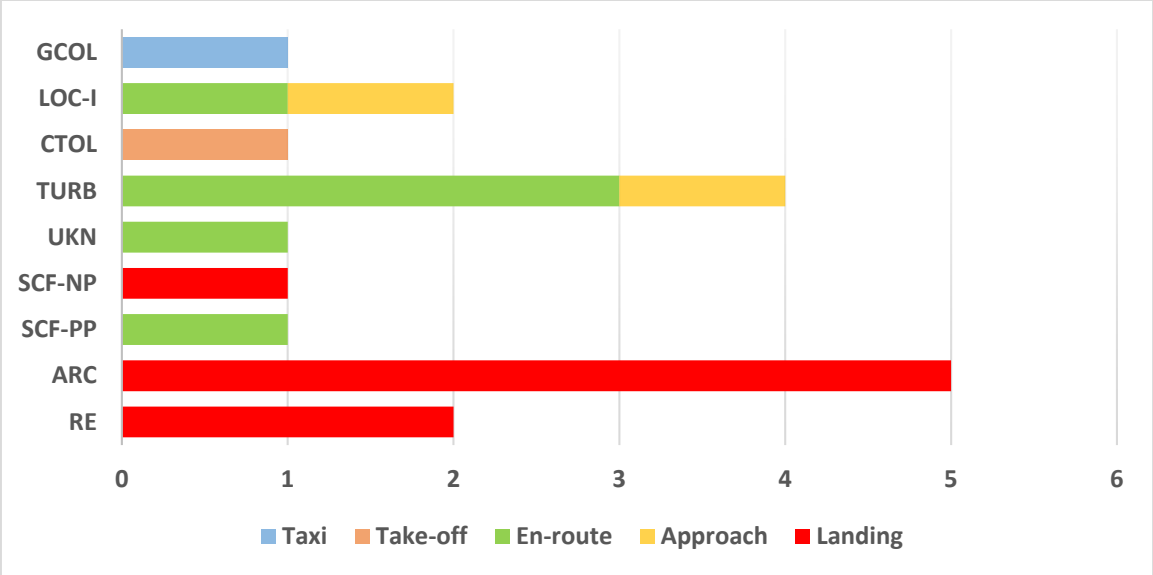
Graph 12 shows the change in the number of Fatal Accidents and non-Fatal Accidents over the last five years involving MID State of registry and State of operator airplanes. The Graph 12 also indicates that one fatal accident was recorded during 2018. Three fatal accidents occurred in 2016 involving MID Operators. In terms of fatalities, the four fatal accidents, which occurred in 2016 and 2018 resulted in 195 fatalities.



Graph 12: Number of Fatal and Non-Fatal Accidents per Year (2015-2019)

2.2.2.2 Phase of Flight

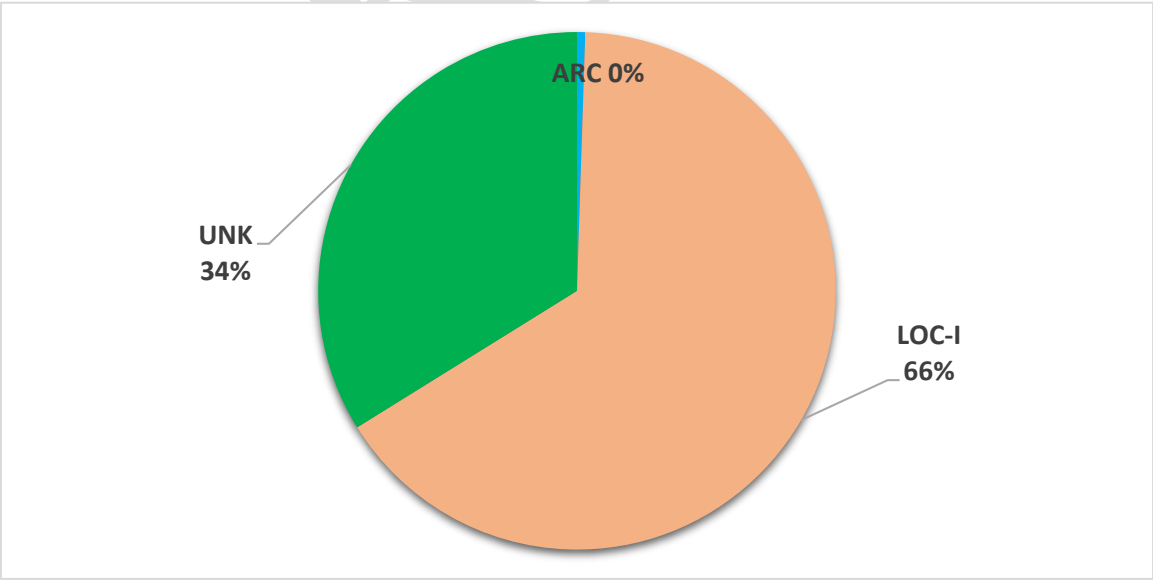
The Graph 13 shows that the majority of accidents related to Runway Excursion (RE), Abnormal Runway Contact (ARC), and system component failure- Non-power plant (SCF-NP) occurrence categories took place during landing flight phase. It was also noted that the engine failure/malfunction-related accident occurred during takeoff (initial climb) and en-route phases of flight. Regarding, Loss of Control Inflight (LOC-I), it took place during en-route and approach (Go-around) flight phase.



Graph 13: Distribution of the Number of Accidents Category per Phase of Flight (2015-2019) (Source: SISG & ICAO Report)

2.2.2.3 Occurrence Category

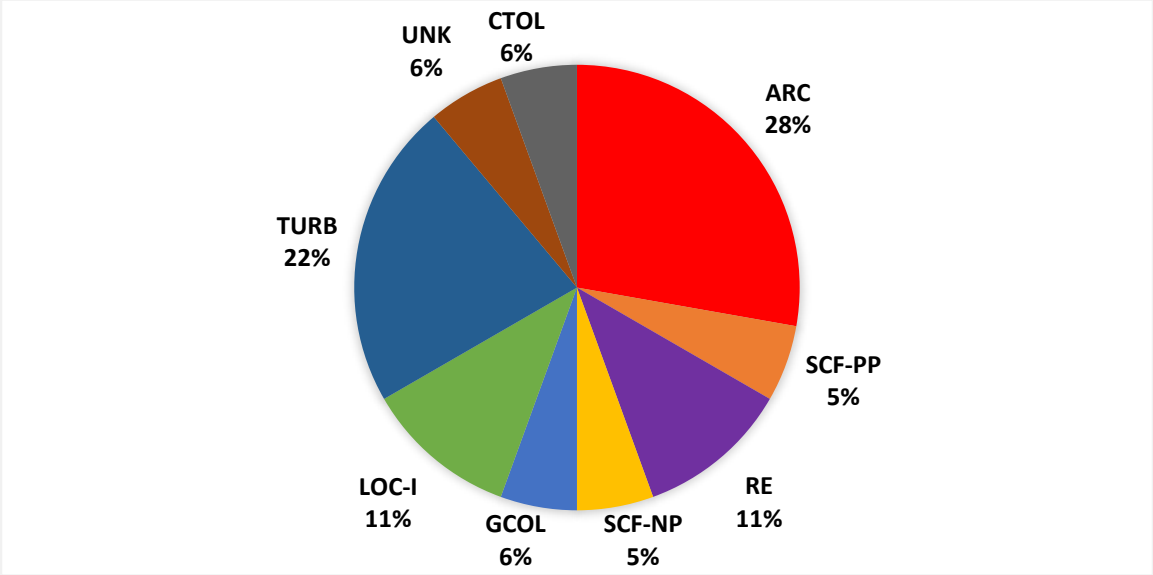
Graph 14 shows the percentage of fatalities associated with the accident Categories for the period 2015-2019: Loss of Control in flight (LOC-I), Unknown (UNK), and Abnormal Runway Contact (ARC).



Graph 14: Fatalities Distribution as Percentage by Occurrence Category (2015-2019) (Source: SISG&IACO Safety Reports)

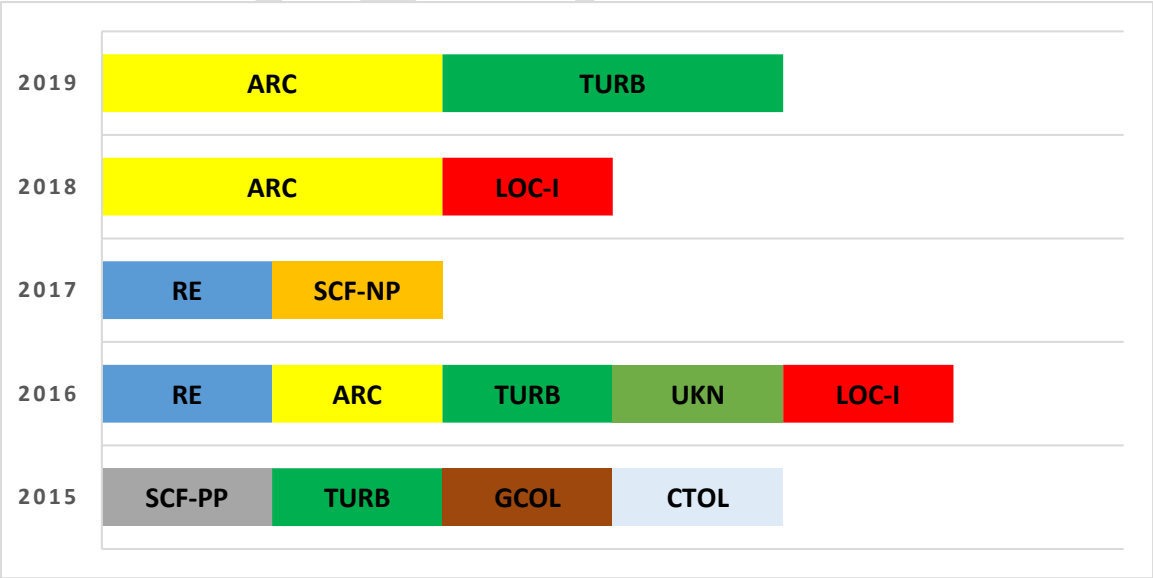
Graph 15 shows that most of the accident's categories experienced during the period 2015 – 2019 was ARC, followed by TURB, LOC-I and RE. However, considering that RE, GCOL, CTOL and ARC are all

considered part of the Runway Safety (RS) Risk Category, RS is still the most frequent. Two LOC-I occurrence had resulted in fatalities. Regarding "Unknown "occurrence category, the causal factors of the accident are still under investigation and thus the occurrence category could not be defined at this stage.



Graph 15: Accident Distribution as Percentage per Occurrence Category (2015-2019) (Source: SISG&IACO Safety Reports)

During 2015-2019, no CFIT accident occurred. However, two LOC-I fatal accidents had taken place during the period of 2016 and 2018 involving aircraft from the region. Runway Excursion (RE) and Abnormal Runway Contact (ARC) are also a serious concern in the region. Engine failure/malfunction (SCF-PP) and Turbulence (TURB) events were registered and are still prevailing as shown in Graph16.



Graph 16: Accident Category Distribution per Year (Source: SISG, iSTARS as of May 7 20)

Taking a more in-depth look at the fatal and non-fatal accidents for the MID Region (State of registry and State of operator) for the period 2015-2019, the following is to be highlighted:

A. In terms of fatality, the fatal accidents categories in the MID Region for the period 2015 – 2019 are:
   1. Loss Of Control- In-flight (LOC-I);
   2. Unknown (UNK); and
   3. Runway Safety – Abnormal Runway Contact (ARC).

B. In terms of frequency, the most frequent accidents categories in the MID Region (State of registry and State of occurrence) for the period 2015 – 2019 are:
   1. Runway Safety (RS) – (RE, ARC, GCOL, and CTOL);
   2. Turbulence encounter – (TURB);
   3. System Component Failure-Power Plant (SCF-PP); and
   4. System Component Failure- non-power plan (SCF-NP).

Identification of the main safety risk Areas based on the analysis of safety data related to the State of registry and State of operator (2015-2019)

To facilitate the identification of the safety priority areas; the safety risk assessment methodology is applied.

Main Risk Area	Frequency	Severity	Risk Level
Loss of Control-Inflight (LOC-I)	2	1	2
Runway Safety (RS)	1	3	3
Turbulence (TURB)	2	5	10
System Component Failure- non power plan (SCF-NP)	4	4	16
System Component Failure- Power Plant (SCF-PP)	4	2	10

Table 4: Main Area Risk

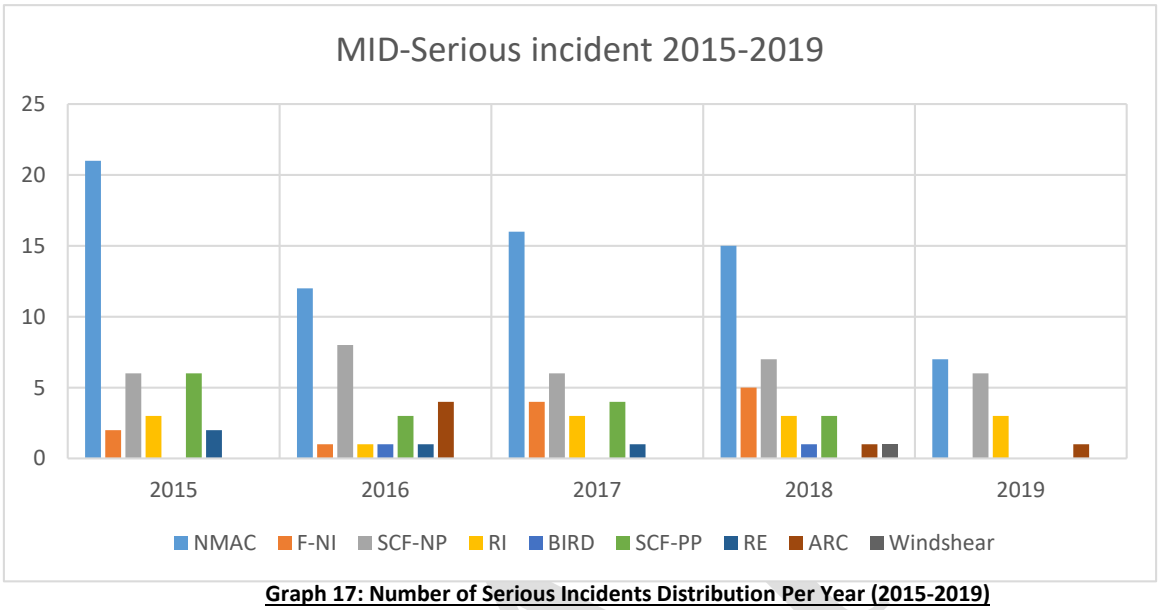
Therefore, the main safety risk areas according to the State of registry and operator accidents data are:

1. Loss of Control-Inflight (LOC-I); and
2. Runway Safety (RS): Runway Excursion (RE) and Abnormal Runway Contact (ARC) during landing

2.2.2.4 Serious Incidents Data Analysis

2.2.2.4.1 Occurrence Category

Graph 17 shows the total number of serious incidents provided by the MID States for the period 2015-2019.



Graph 17: Number of Serious Incidents Distribution Per Year (2015-2019)

The data shows that there was a significant increase on the number of NMAC Occurrences. The number of serious incidents data shared by the MID States have been considered and included in the analysis to shed light and identify the potential safety concerns in the MID region. However further data analysis should be provided by the MID States for an in-depth analysis.
Taking a more in-depth look at the serious incidents reported by the MID Region for the period 2015-2019, the following is to be highlighted:

A. In terms of frequency, the most frequent serious incidents categories in the MID Region are:
   1. Near Mid Air Collision (NMAC);
   2. System Component Failure- Non poer plant (SCF-NP); and
   3. Runway incursion- (RI)

The main safety risk indentified and shared by the States as follows:

- Low level wind shear
- Wake turbulence
- Bird strikes
- Human factors, Organizational Process Management, and Support from Manufacturers
- Unmanned Aircraft Systems
- TCAS/RA

2..2.3 ICAO In-depth Analysis of Accidents

2.2.3.1 Runway Excursions and Abnormal Runway Contact:

During 2015-2019, Runway Excursions and abnormal runway contact accidents and serious incidents mainly occurred in the landing phase of flight and counted for approximately 1% of fatality. This focus area covers the risk of runway excursions, including the direct precursors such as hard landings, high speed landing, landings following an un-stabilized approach. The MID Region continued improvement in runway safety, which is one of the industry's principal risk areas. Table 5 indicted the root cause.

Root Cause Analysis		
Latent Conditions	**1**	Ineffective safety management system
	2	Incomplete/inefficient operator SOP
	3	Deficient flight crew training
	4	Regulatory oversight
Threat	**1**	Decision to make a landing on short runway with tailwind
	2	Poor judgment and continued landing after an un-stabilized approach
	3	Improper calculating of landing speed without focusing on the tailwind component
	4	Technical failures Pilot information
	5	Ineffective reporting of runway surface condition/Contaminated runways
	6	Airport facilities including poor runway paintings/markings/signage lighting
	7	Meteorology
Errors	**1**	Timely crew decisions (very low-level go-arounds)
	2	Failed to go around after un-stabilized approach
	3	SOP Manual not updated and maximum tailwind not mentioned
	4	Manual handling/flight controls
	5	Contaminated runways
Contributing factors	**1**	Anti-skid failures of landing gear causing prolong landing distance.
	2	Instantaneous variable wind condition on aerodrome traffic pattern.
	3	Late activation of airbrakes and spoilers (especially airbrakes) with tailwind cause to increase the landing roll distance.

Table 5: RE and ARC Root Cause

Some of the Precursors, which could Lead to Runway Excursion:

A. Precursors for aircraft overrunning the end of the runway on landing (landing overrun) could include:
    1. Long landing / high across threshold / extended flare / floating,
    2. incorrect performance calculation,

3. ineffective use of stopping devices / time to apply reverse thrust or braking / inappropriate use of auto brake setting,
4. weather related / runway condition / aquaplaning, unsterilized approach, tailwind landing.

B. Precursors for aircraft veering off the side of the runway during landing (landing veer-off) could include:
   1. Crosswind and wet /contaminated runway,
   2. hard landing / inappropriate use of stopping devices / asymmetric braking or reverse thrust,
   3. inappropriate use of nose wheel steering.

2.2.3.2 Loss of Control-Inflight:

During 2015-2019 Aircraft upset or Loss of control contributed to two accidents and counted for around 66% of fatalities. During the years 2016 and 2018, the LOC-I occurred during go around (GOA) and En-route phases of flight. Table 6 below the root-cause analysis is based mainly on industry's analysis of the LOC-I accidents:

Root Cause Analysis		
Latent Conditions	**1**	Inadequate safety management system including the use of the FDM data
	2	Incomplete/Inefficient Flight operations
	3	Regulatory oversight
Threat	**1**	Inappropriate Flight Crew Automation training
	2	Type-rating related issues on complex and highly automated aircraft
	3	Contained engine/power plant malfunction
	4	Severe turbulence, Thunderstorms, wind shear/Gusty wind
	5	Poor visibility/IMC conditions
	6	Spatial disorientation/Somatogravic illusion
	7	Flt Crew misdiagnose the problem leading to the application of an incorrect recovery procedure
	8	Lack of exposure to the required maneuvers during normal line flying operations
	9	Limitations in simulator fidelity could lead to pilots not having the manual flying skills required to recover from some loss of control scenarios.
Errors	**1**	Inappropriate/Incorrect use of Automation by flight crew
	2	Inadequate flight crew monitoring skills/awareness or communication
	3	Flt Crew mishandling of manual flight path and/or speed control
	4	Abnormal checklist
	5	Incorrect recovery technique by flight crew when their aircraft has become fully stalled

Contributing factors	**1**	Unnecessary weather penetration
	2	Operation outside aircraft limitations
	3	Unstable approach
	4	Vertical/lateral speed deviation

Table 6: LOC-I Root Cause

A. **Direct Precursors to a Loss of Control Event:**

1. Deviation from flight path
2. Abnormal airspeed or triggering of stall protections

2.3 MID Region Safety Performance - Safety Indicators-Reactive

2.3.1 Goal 1: Achieve a Continuous Reduction of Operational Safety Risks

		Average 2015-2019		2019	
Safety Indicator	**Safety Target**	**MID**	**Global**	**MID**	**Global**
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**	**2.02**	2.6	**1.5**	3
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**	0.61	0.44	**0**	0.15
Number of Runway Excursion related accidents per million departures	Reduce/Maintain the regional average rate of Runway Excursion related accidents to be below the global average rate by **2016**	**0.15**	0.36 **(2017-2019)**	**0**	0.43
Number of Runway Incursion accidents per million departures	Regional average rate of Runway Incursion accidents to be below the global average rate	**0**	**0 (2017-2019)**	0	0
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**.	**0.14**	0.08	**0**	0.05
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	0	0
Number of Mid Air Collision (accidents)	Zero Mid Air Collision accident	0	0	0	0

Table7: Goal 1-Safety indicators-Reactive

3. Proactive/Predictive Safety Information

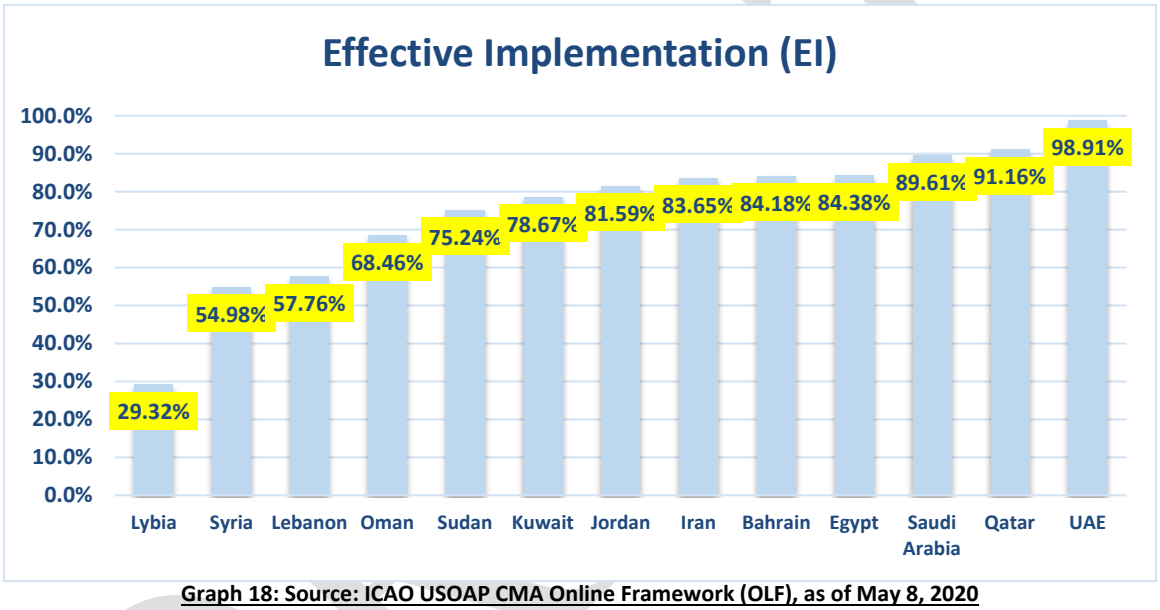
This section of the Annual Safety Report focuses on proactive/predictive safety data analysis to identify organizational issues that forms the basis for the development of SEIs.

3.1 ICAO USOAP-CMA

3.1.1 USOAP-CMA Review

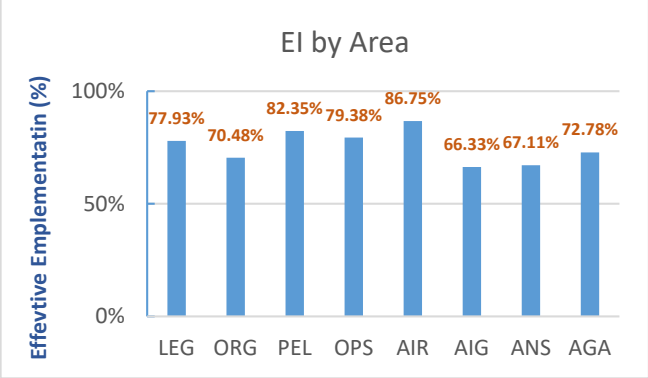
The regional average overall Effective Implementation (EI) in the MID Region (13 out of 15 States have been audited) is 75.59 %, which is above the world average 68.39 % (as of May 5 2020). Three (3) States are currently below EI 60%.

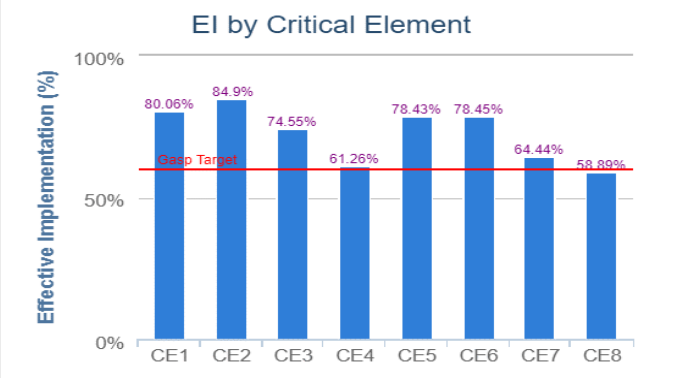
Currently, 77% of the audited States achieved the target of 60% EI, as suggested by the Global Aviation Safety Plan (GASP) and the MID Region Safety Strategy.



Graph 18: Source: ICAO USOAP CMA Online Framework (OLF), as of May 8, 2020

The EI by Area (e.g. Operations, Airworthiness) shows that all areas are above 60% EI, which reflect the improvement in the oversight capabilities particularly in the area of ANS and AGA. With respect to the Critical Elements (CEs), CE4 (Qualified technical personnel) improved and is above 60% (61.26%) EI, whereas CE8 (resolution of safety issues) is the only one below EI 60% (58. 89%) EI.





Graph 19: Source: ICAO iSTARS, as of May 8 2020

3.1.2 ICAO USOAP CMA Activities — MID States Status for 2019

The main activities under USOAP-CMA are:

- **Audit:** This activity is performed on-site to conduct a systematic and objective assessment of State's safety oversight system. It can be full or limited.
- **ICAO Coordinated Validated Mission (ICVM**): This activity is performed to assess a State's effective corrective actions addressing previously identified findings related to PQs requiring an on-site activity.
- **Off-site Validation activity**: This activity is performed to assess a State's effective corrective actions addressing previously identified findings related to PQs not requiring an on-site activity.
- **State Safety Programme Implementation Assessment (SSPIA):** This activity is to perform a qualitative (non-quantitative) assessment of the progress made by State in implementing SSP. Broken down into 8 areas: GEN (SSP general aspects), SDA (safety data analysis), PEL, OPS, AIR (AMO aspects only), ANS (ATS aspects only), AGA, and AIG.

State/organization	Type of activity	Date	Status
Iraq	Audit (desktop)	23 Dec 19 to 19 Feb 20	Completed
Lebanon	ICVM	22 to October 30 2019	Postponed
Oman	Audit	10 to February 20 2019	Postponed to 2020
Saudi Arabia	Audit (cost-recovery)	17 to 27 Nov 2019	Postponed to 2020
United Arab Emirates	SSPIA	9 to December 19 2019	Completed

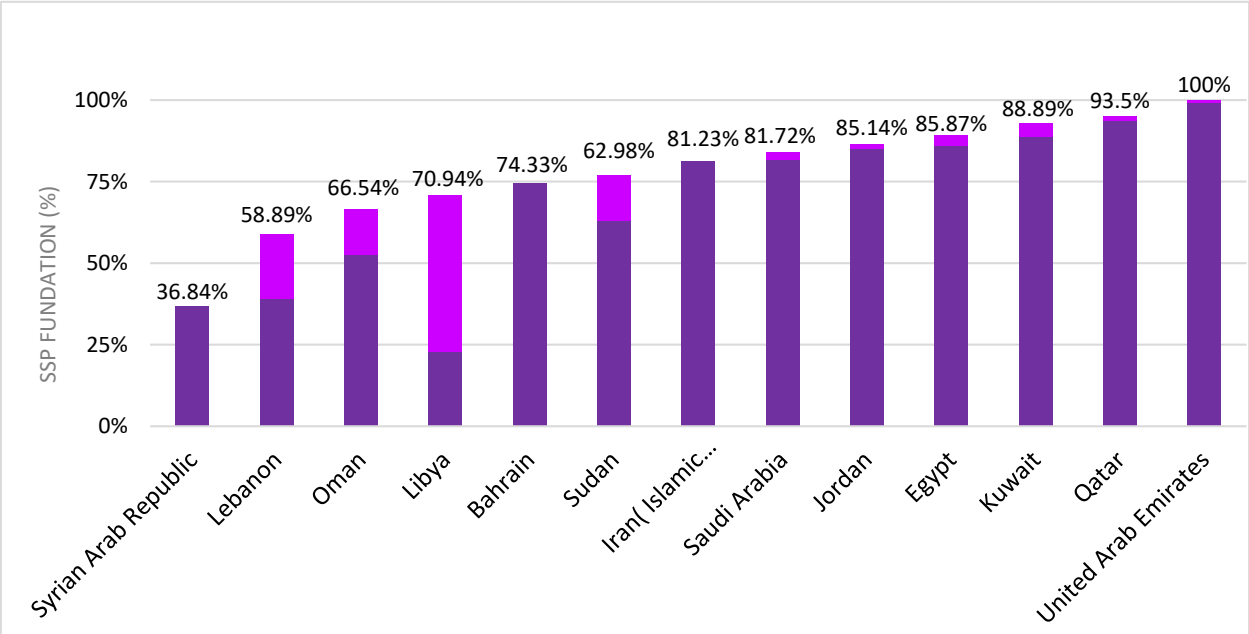
Table 8: State Safety Programme Implementation Assessment

3.1.3 MID Region State Safety Programme (SSP)

3.1.3.1 SSP Foundation

A sub-set of 299 Protocol Questions (PQs) out of the 1,047 PQs used to calculate the USOAP Effective Implementation (EI). This sub-set of questions are considered as the foundation for a State Safety Programme (SSP) implementation. A SSP Foundation indicator is calculated, as the percentage of PQs which are either validated by USOAP or submitted as completed through the corrective action plans

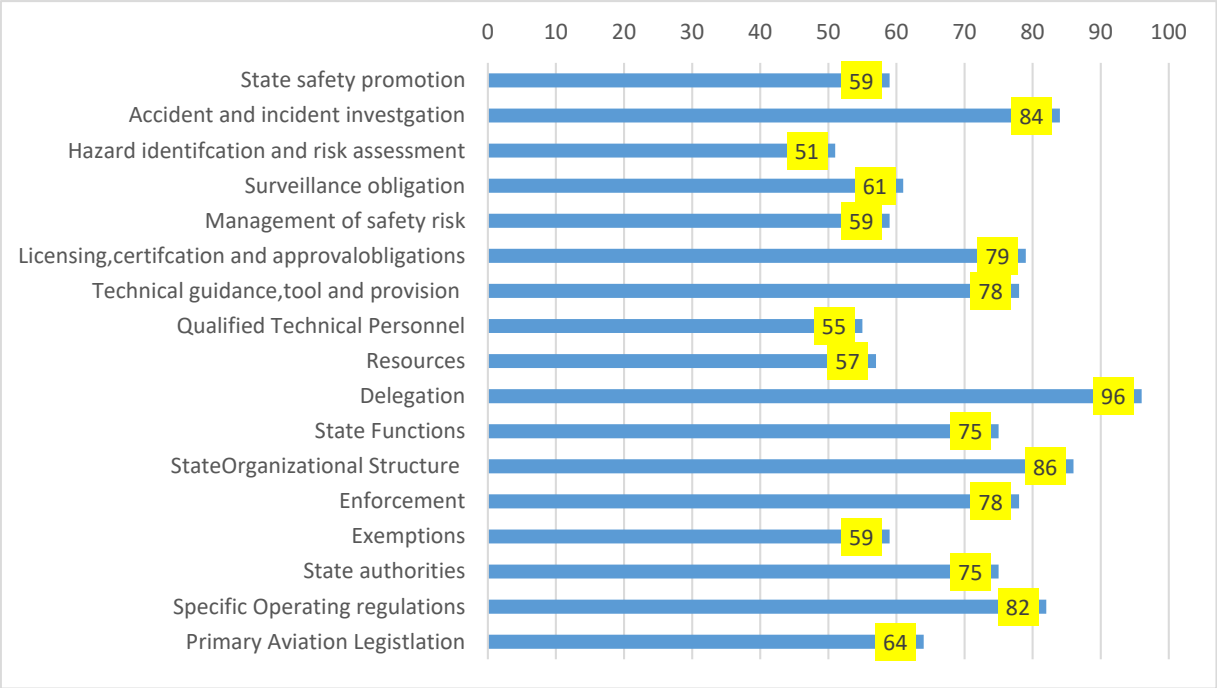
(CAP) on the USOAP CMA Online Framework.The average EI for SSP foundation PQs for States in the MID Region is 76, 21%. The SSP foundation EI for MID Region States is shown in the graph



20 below.

Graph 20: Overall SSP foundation for MID Region States (Source: iSTARS as of 8 May 2020)

The sub-set of PQs are grouped by 17 subjects based on the Annex 19 amendment 1 and the 4th edition of the Safety Management Manual (forthcoming). States with EI above 60% may still have PQs to address which are fundamental for their SSP. Hazard identification and risk assessment is the lowest one with 51%, followed by qualified technical personnel with 55%.

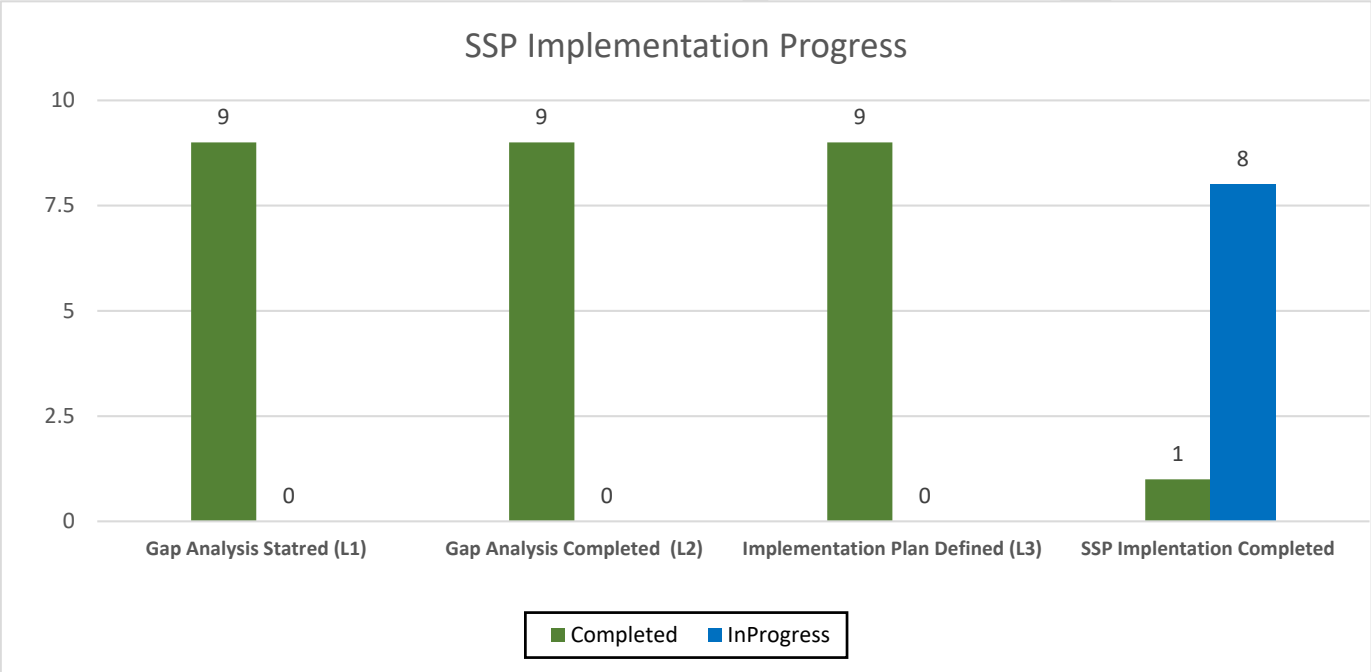


Graph 21: Average EI by Safety Management subjects for States in MID Region (Source: iSTARS as of May 8 2020)

3.1.3.2 SSP Gap Analysis

These PQs can be prioritised and addressed when conducting the SSP gap analysis or while defining the SSP implementation/action plan. States can use the ICAI iSTARS online to perform an SSP Gap Analysis-SMM 4th Edition. This provides an indication of the broad scope of gaps and hence overall workload to be expected. This initial information can be useful to senior management in anticipating the scale of the SSP implementation effort and hence the resources to be allocated/provided.

The SSP statistics shown in the graph 22 are high-level information about each Gap analysis project performed by States themselves (Self-reported by the State and not validated by ICAO). SSP implementation progress has been measured for each State using simple milestones as per the entered data. A State having reviewed all Gap analysis Questions (GAQs) has reached level 2. A State having reviewed and defined actions for all GAQs has reached level 3. A State having completed all actions has reached 4.
The completion percentage of GAQs in each level is given in graph 23 for States in the MID Region.



Graph 22: SSP Implementation Progress for States in MID Region, Limited to States with EI>=60%- States number: 9 (Source: iSTARS as of May 8 2020)

3.1.3.3 MID Region State Safety Programme (SSP) Implementation challenges

Implementation of SSP is one of the main challenges faced by the State in the MID Region. The RASG-MID addresses the improvement of SSP implementation in the MID Region as one of the top Safety Enhancement Initiatives (SEIs). Common challenges/difficulties have been identified based on the States' feedback, as follows:

1. Establishment of an initial Acceptable Level of Safety Performance (ALoSP), which necessitates effective reporting system to support collection/analysis of safety data;
2. Allocation of resources to enable SSP implementation
3. identification of a designated entity (SSP Accountable Executive and SSP Implementation Team); and

4. lack of qualified and competent technical personnel to fulfil their duties and responsibilities regarding SSP implementation.

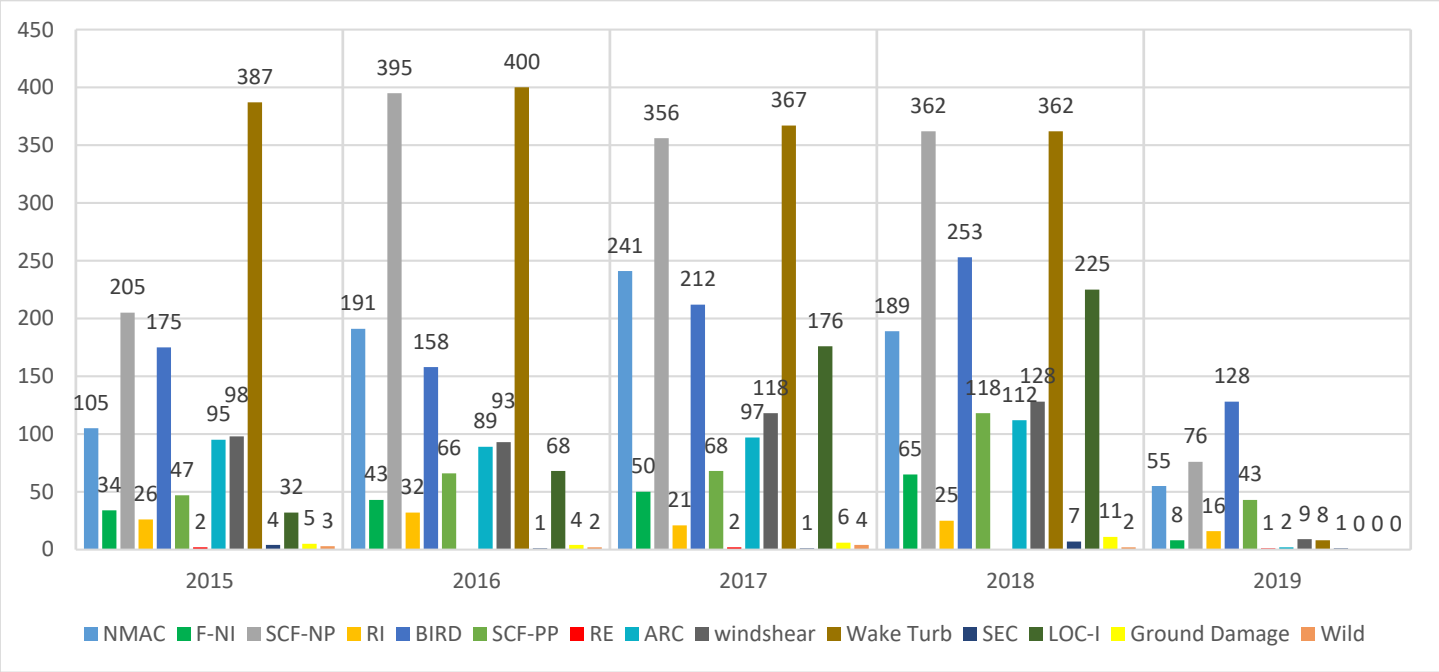
The following actions were recommended to support the SSP implementation:

- Continuous update of the SSP Gap Analysis available on iSTARS (13 States completed the Gap Analysis);
- Participate in the new ICAO Safety Management Training Programme (SMTP), with the CBT part and the Safety Management for Practitioners Course;
- Work with the ICAO Regional Office to make use of available means (e.g. Technical Co-operation Bureau) to provide assistance needed for SSP implementation; and
- Identify safety management best practices in coordination with States (champion State to promote best practices among other States) including sharing of technical guidance and tools related to SSP (e.g. advisory circulars, staff instructions);
- Establishment of voluntary and mandatory safety reporting systems.

- The RASG-MID also supported the establishment of the MENA RSOO, with a primary objective to assist member States to develop and implement SSP. The MENA RSOO is still in the establishment process.
- Several Safety Management Workshops, training courses, and meetings have been organized to support the implementation of SSP/SMS and address the challenges and difficulties, as well as sharing of experiences and best practices.
- In addition, the MID Region safety management implementation Roadmap has been endorsed by the RSC/7 to assist MID Region States to comply with the requirement for the implementation of the State Safety Programmes (SSPs) by States and the SMS by service providers as established in the Annex 19, Safety Management, Global Aviation Safety Plan (GASP) and MID Region Safety Strategy. The Roadmap will be linked to the MID NCLB Strategy in order to support the States in a prioritized manner and will be implemented within the RASG-MID framework.
- Moreover, the Safety Management Implementation Team (SMIT) is established as the main Regional Framework for the provision of assistance to States through Safety Management Assistance Missions.

3.1.3.4 Incident data provided by the MID States for the period (2015-2019)

Graph 23 below shows that the number of Wake Turbulence incidents reported is the highest one, followed by system component system-non-power plant and airborne conflict incidents (near mid-air collision). For an in-depth analysis and to identify the underlying safety issues, MID States should provide further safety information in order to come out with strategic initiatives and mitigations. In addition, the year of 2018 showed an increase in incidents reporting.



Graph 23: Total number of incidents provided by the MID States for the period 2015-2019

3.2 IATA Data

3.2.1 IATA Operational Safety Audit (IOSA)

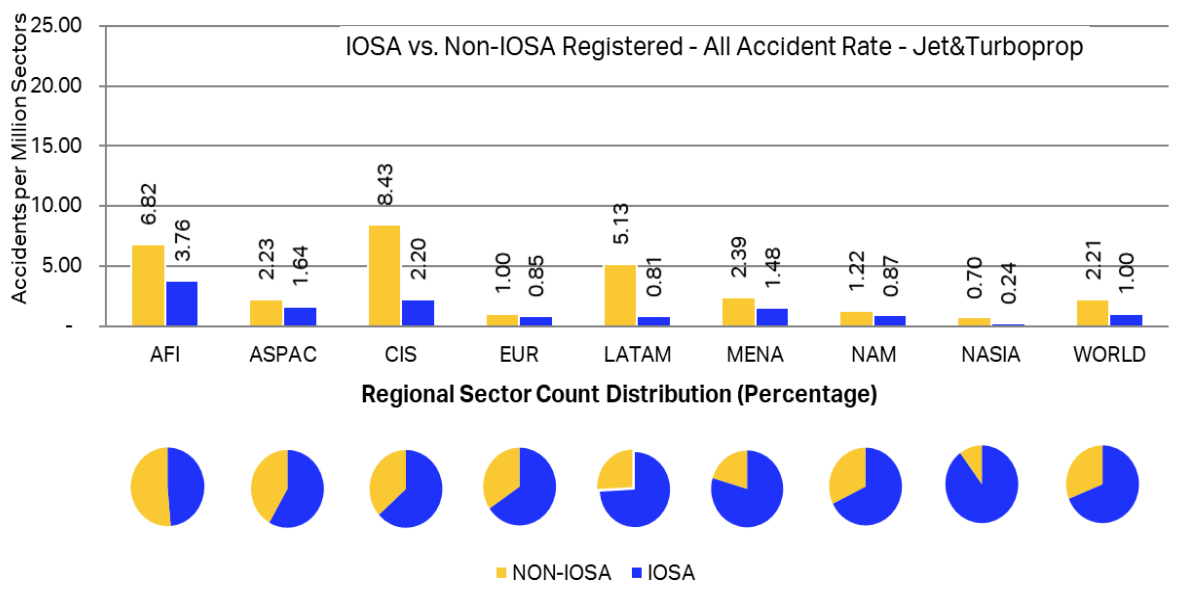
There are currently 437 airlines on the IOSA Registry of which 141 are non-IATA Members. The exchange of almost 2,000 IOSA Audit Reports every year confirms the participation of the airlines in the IOSA program. The IOSA program continues to be acknowledged by numerous MID region regulators and is utilized to complement their oversight activities. In 2019, regulators from Jordan, Lebanon and Kuwait signed the Memorandum of Understanding (MoU) with IATA on the use of the IOSA program.

In June 2019, IATA introduced a new methodology under which the effectiveness of implementing an IOSA requirement will be audited. The method is based on the SMS Evaluation Tool developed by the Safety Management International Collaboration Group (SM ICG).

Over the next few years, IOSA will undergo a digital transformation that will enable IOSA airlines to compare and benchmark their performance. In the long run, the digital transformation will help to focus auditing on areas with the highest level of safety risk.

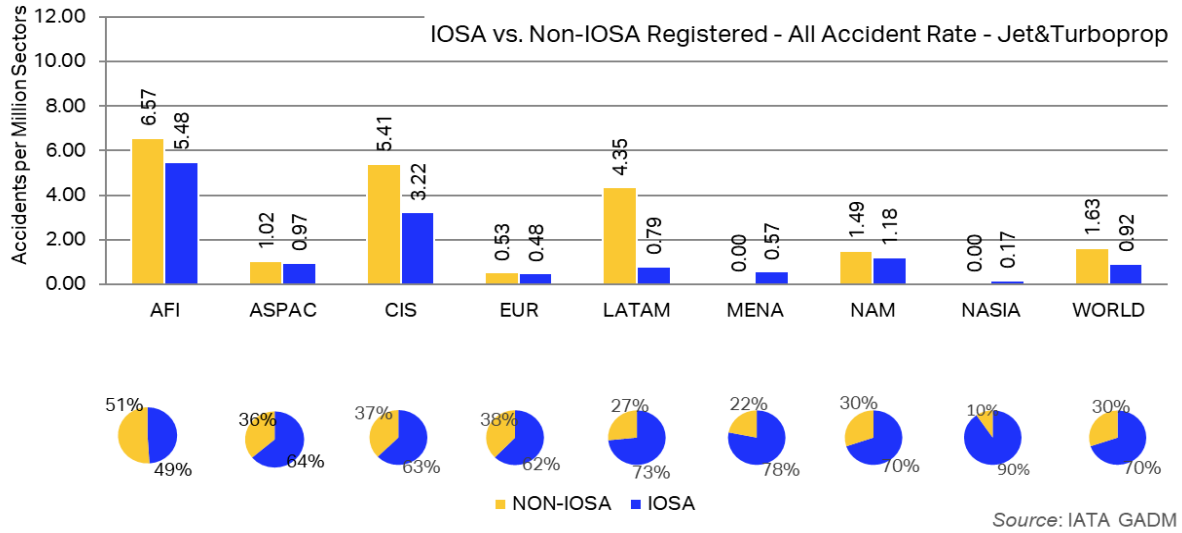
IOSA is an internationally recognized and accepted evaluation system designed to assess the operational management and control systems of an airline. It is worth mentioning that IOSA registered airlines outperform non-IOSA airlines in MENA. The accident rate among non IOSA

registered operators for the period 2015-2019, was above MENA IOSA registered airlines average by an average of 2.39.



Graph 24: IATA ISOA VS NON IOSA Accident rate

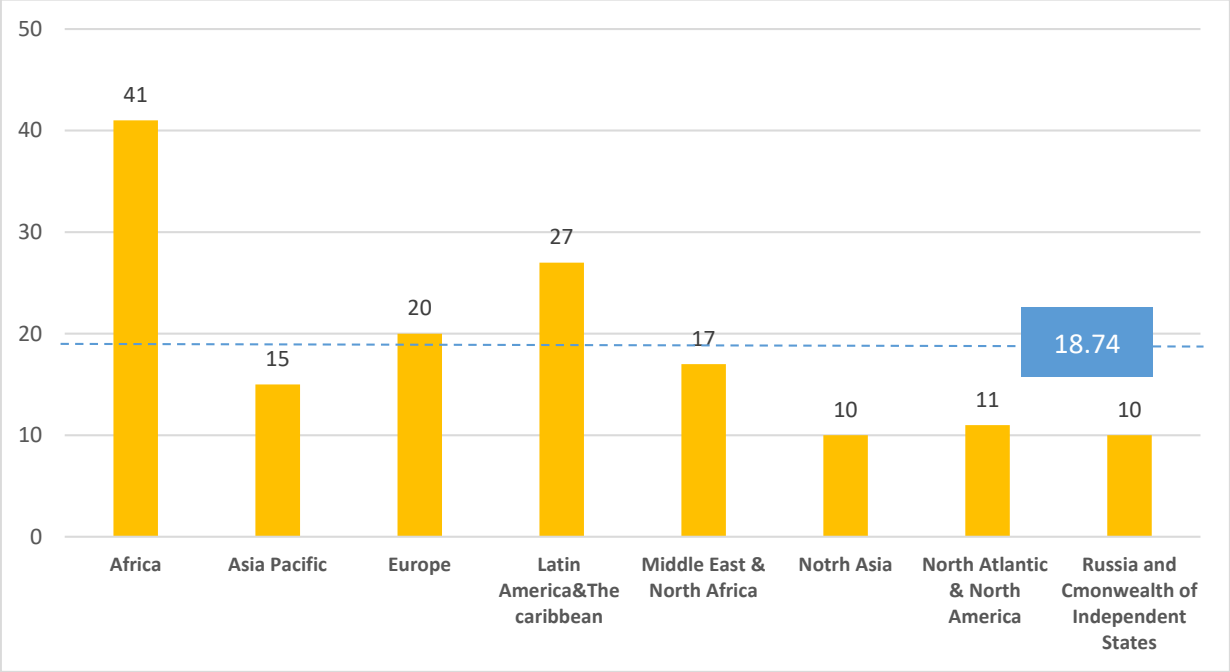
The full year accident rate for IOSA carriers in 2019 was lower than the rate for non-IOSA operators.



Graph 25: IATA ISOA VS NON IOSA Accident rate

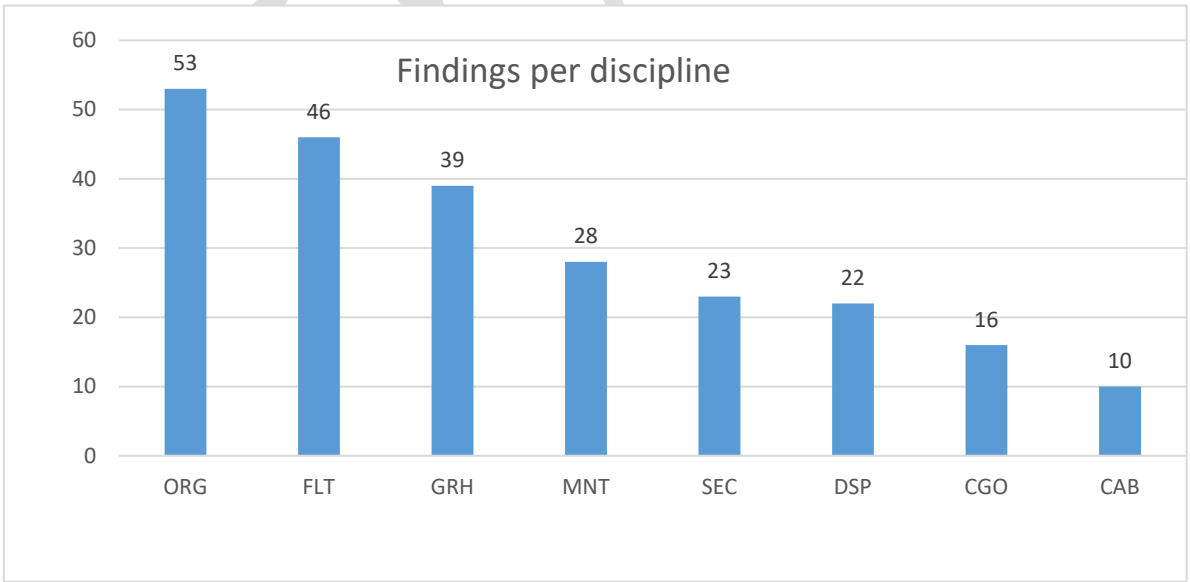
During 2019, a total of 246 audits were performed under the IOSA Program. 219 Audits were renewal audits, including 22 initial registration audits and five Verification Audits. The IOSA audit results analysis captured under this section cover the period January-December 2019. A summary of the IOSA audit findings is as follows:

1. 16 audits were performed in the MENA Region with an average of 17 findings per audit. As shown in graph 26 below.



Graph 26: IATA audit finding

2. Findings were mainly in the areas of Organization Management (ORG), Flight Operations (FLT) and Ground Handling Operations (GRH), around 50% of the Top 10 Finding are related with the SMS implementation throughout the whole organization, and most of them are located at Organizational level. Graph 27 below demonstrates the number of findings per discipline.

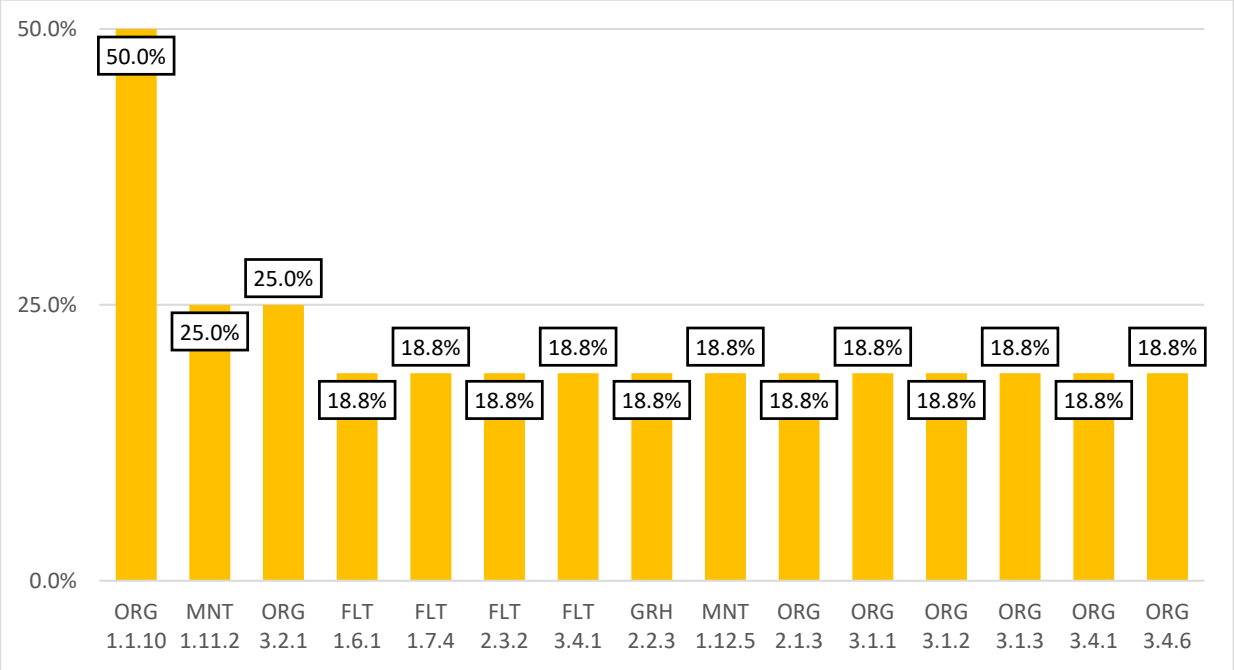


Graph 27: IATA audit finding per discipline

3. Graph 28 shows the Top Finding SMS related are :

- ORG 1.1.10, SMS implementation and integration throughout the Operator's organization.
- MNT 1.11.2, measurable maintenance safety and quality standards required to external maintenance organizations.

- ORG 3.2.1, linked with setting performance measures in support of the operator's safety objectives and to validate the effectiveness of safety risk controls
- MNT 1.12.5, processes for setting performance measures to verify the safety performance of maintenance operations
- ORG 3.1.1, Hazard identification program
- ORG 3.1.2, Safety risk assessment and mitigation program
- ORG 3.1.3, operational safety reporting system.
- ORG 3.4.1, Quality Assurance Programs
- ORG 3.4.6, the Quality Assurance Program auditing according with the IOSA ISARPS



Graph 28: IATA SMS Finding

3. The number of SMS Finding recorded on the IOSA Audits in 2019, demonstrates that some SMS principles are not fully implemented in some airline operators. Approximately 10% of the IOSA audits performed in 2019 had SMS related finding. The total number of SMS related findings in 2019, were 56 Findings. Three are the main root causes linked with the lack of compliance with the SMS provisions:
   - The implementation and integration of the SMS throughout the organization
   - The SMS Training
   - Lack of proper measurable specifications

3.2.2 IATA Safety Audit for Ground Operations (ISAGO)

ISAGO is a standardized and structured audit program of Ground Service Providers (GSPs) operating at airports. The audits assess a GSP's conformance with standards developed by global industry experts. The standards aim to improve flight safety and reduce ramp accidents and incidents through safety management and standardization of procedures.

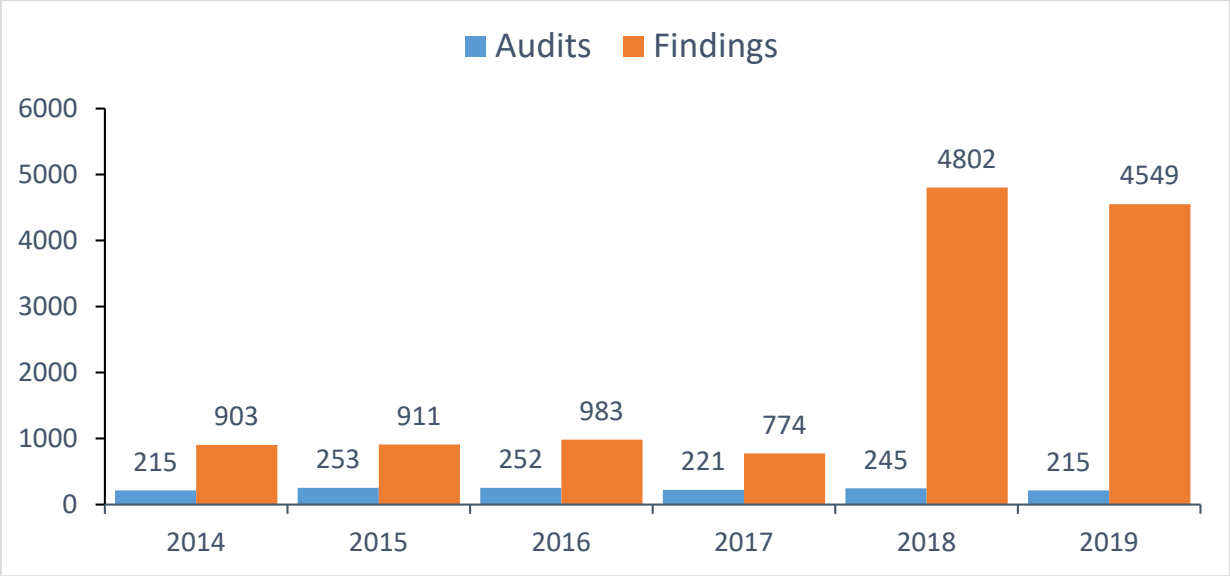
ISAGO is currently the only global program that is aligned with ICAO Doc 10121, Manual on Ground Handling, and requires a GSP to implement a SMS equal to that of aircraft and airport operators.

Currently there are 180 Ground Service providers (GSPs) that are ISAGO-registered, operating at nearly 200 airports worldwide.

Analysis of data submitted to the IATA Ground Damage Database (GDDB) indicated that ISAGO made a positive impact on the safety culture and performance of the GSPs that had been audited and granted an ISAGO registration.

3.2.2.1 Audit Result Analysis (Global)

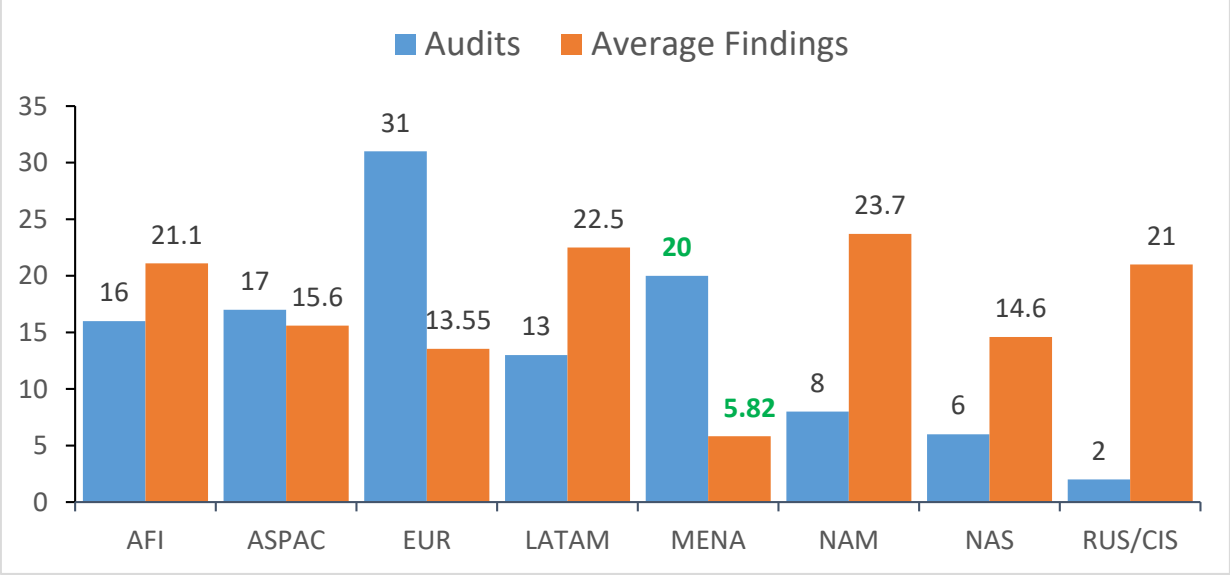
The total audits performed in 2019 are **215**, with an average of 21 findings raised per audit. As shown in graph 29 below.



Graph 29: IATA Audit Result Analysis

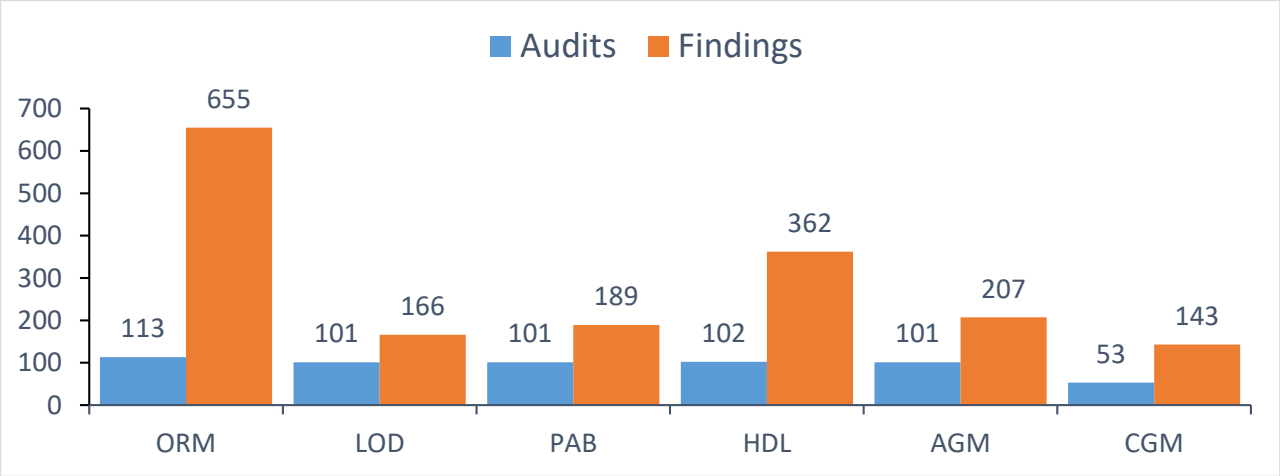
3.2.2.2 Audit Result Analysis per region

In MENA, a total of 20 audits performed with an average of 5.82 findings raised per audit. As shown in graph 30.



Graph 30: IATA Audit Result Analysis per region

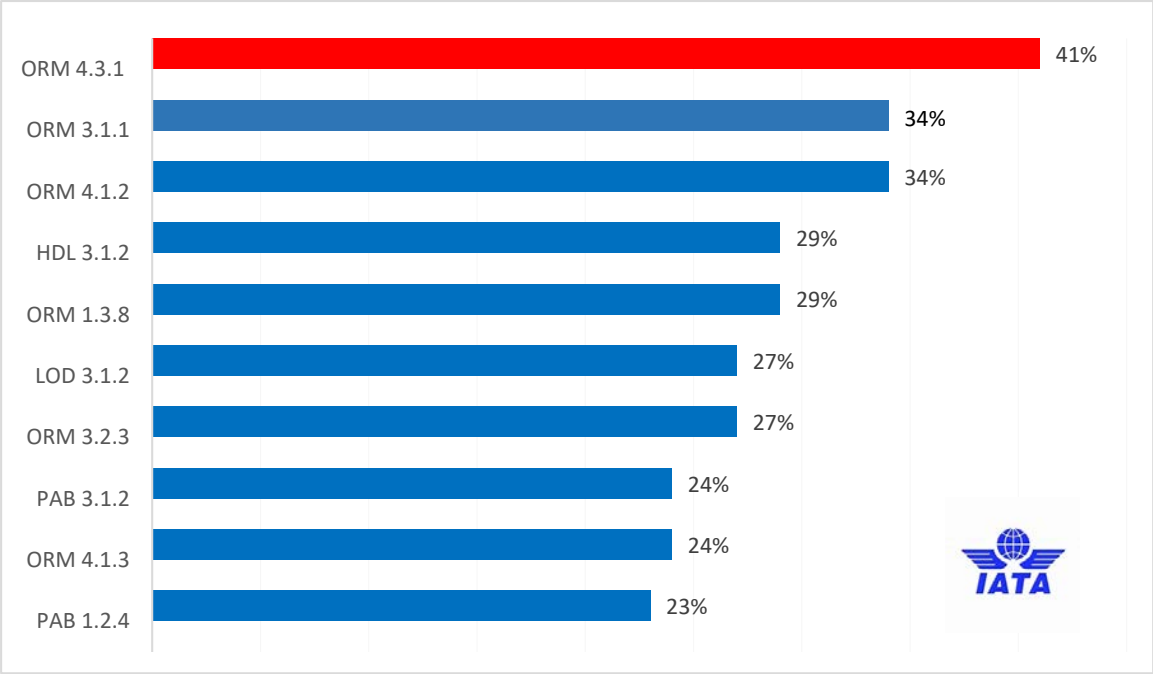
3.2.2.3 Audit Result Analysis per Discipline



Graph 30: IATA Audit per Discipline

3.2.2.4 Trend – Top Findings

Standards Manual (GOSM) Edition 8 published in April 2019



Graph 30: IATA Top Findings

3.2.2.5 ISAGO Main 5 root causes

- Unclear/unavailable/inadequate regulations. Standard procedures
- Inadequate training
- Poor workload management or task delegation

- Rules, regulations, procedures not followed
- Poor planning, prioritization

3.3 Region Safety Performance - Safety Indicators-Proactive/Predictive

3.3.1 Goal 2: Strengthen States' Safety Oversight Capabilities/Progressively Increase the USOAP-CMA EI Scores/Results:

Safety Indicator	Safety Target	MID	Remark
A. Regional average EI	a. Increase the regional average EI to be above 70% by **2020**	**75.23**	Target Achieved
B. Number of MID States with an overall EI over 60%.	11 MID States to have at least 60% EI **by 2020**	10 States	
C. Regional average EI by area	c. Regional average EI for each area to be above 70% by **2020**	6 areas	
D. Regional average EI by CE	d. Regional average EI for each CE to be above 70% by **2020**	5 CEs	
E. Number of Significant Safety Concerns	MID States resolve identified Significant Safety Concerns as a matter of urgency and in any case within 12 months from their identification. No significant Safety Concern by **2016**.	None	Target Achieved

Table 9: Goal 2

3.3.2 Goal 3: Improve Aerodrome Safety:

Safety Indicator	Safety Target	MID	Remark
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.	67%	
	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 having established a RST **by 2020**	**57%**	Target Achieved

Table10: Goal 3

3.3.3 Goal 4: Expand the use of Industry Programmes

Safety Indicator	Safety Target	MID	Remark
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.	A. 57% (As of Sep 2017)	

	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**	5 out of 10 States (50%)	
Use of the IATA Safety Audit for Ground Operations (ISAGO) certification, as a percentage of all Ground Handling service providers	The IATA Ground Handling Manual (IGOM) endorsed as a reference for ground handling safety standards by all MID States **by 2020**	5 states out of 10 signed ISAGO MOU 50%	

Table11: Goal 4

3.3.4 Goal 5: Implementation of Effective SSPs and SMSs:

Safety Indicator	Safety Target	MID	Remark
Number of States that have completed the SSP Gap Analysis on iSTARS	13 MID States by 2020	9 States	
Number of States that have developed an SSP implementation plan	13 MID States by 2020	9 States	
Regional Average overall SSP Foundation (in %)	70% by 2022	76.22%	Target achieved
Number of States that have fully implemented the SSP Foundation	10 MID States by 2022	1 State	
Number of States that have implemented an effective SSP	7 MID States by 2025	TBD	

Table 12: Goal 5

3.3.5 Goal 6: Increase Collaboration at the Regional Level to Enhance Safety:

Safety Indicator	Safety Target	MID	Remark
Number of States attending the RASG-MID meetings	At least 12 States from the MID Region	**14 States**	
Number of States providing required data related to accidents, serious incidents and incidents to the MID-ASRTASRG	All States from the MID Region	9 States	
Number of States that received assistance/support through the RASG-MID, MENA RSOO and/or other NCLB mechanisms	All States having an EI below 60% to be member of the MENA RSOO	TBD	
	All States having an EI below 60% to have an approved NCLB Plan of Actions for Safety (agreed upon with the ICAO MID Office)		

Table 13: Goal 6

4. Safety Priorities for MID region

One of the GASP goals is for States to improve their effective safety oversight capabilities and to progress in the implementation of SSPs. Thus, GASP calls for States to put in place robust and sustainable safety oversight systems that should progressively evolve into more sophisticated means of managing Safety. In addition to addressing organizational/systemic safety issues, GASP addresses high-risk categories of occurrences, which are deemed global safety priorities. These categories were determined based on actual fatalities from past accidents, high fatality risk per accident or the number of accidents and incidents. Therefore, the regional operational Safety risks, organizational issues, and the emerging safety risks will be defined and which would support and improve the development of the Safety Enhancement Initiatives (SEIs).

4.1 Regional Operational safety risks

Operational safety risks arise during the delivery of a service or the conduct of an activity (e.g. operation of an aircraft, airports or of air traffic control). Operational interactions between people and technology, as well as the operational context in which aviation activities are carried out are taken into consideration to identify expected performance limitations and hazards.
The reactive and proactive safety information provided by ICAO, IATA, MID Region States and the "feared consequences" of the risk portfolio of DGAC France were considered for identifying the regional operational risks .table14 shows that each identified safety issue is linked to the potential accident outcome (s),and the safety issues for the MID Region as follow:

		Potential Accident Outcome						
Safety Issues	**Accident Severity**	**CFIT**	**LOC-I**	**MAC**	**GCOL**	**RE/ARC**	**Injury Damage inflight**	**Injury Damage on Ground**
Monitoring of flight paremeters and automation modes	Catastrophic		x			x	x	x
Convective weather	Catastrophic	x	x			x		
Flight planning and preparation	Catastrophic	x	x			x		
Crew Resource Management	Catastrophic	x	x	x		x		
Handling of technical failure	Catastrophic	x	x			x		
Handling and execution of GOA	Catastrophic	x	x			x		
Loss of separation in flight/ and or airspace/TCAS RA	Catastrophic			x			x	
Experience, training and competence of Flight Crews	Catastrophic	x	x	x		x		
Deconfliction between IFR and VFR traffic	Catastrophic			x			x	

		Potential Accident Outcome						
Safety Issues	**Accident Severity**	**CFIT**	**LOC-I**	**MAC**	**GCOL**	**RE/ARC**	**Injury Damage inflight**	**Injury Damage on Ground**
Inappropriate flight control inputs	Catastrophic		x			x		
Contained engine Failure/Power Plant Malfunctions	Catastrophic	x	x			x	x	
Birdstrike/Engine Bird ingestion	Catastrophic		x			x		
Fire/Smoke-non impact	Catastrophic		x				x	x
Wake Vortex	Catastrophic		x				x	
Deviation from pitch or roll attitude	Catastrophic	x	x			x		
Security Risks with impact on Safety	Catastrophic		x					
Tail/Cross wind/Winds hear	Catastrophic		x			x		x
Runway Incursion	Catastrophic				x	x		x
Maintenance events	Catastrophic	x	x			x	x	x
Contaminated runway/Poor braking action	Major					x		x
Clear Air Turbulence (CAT) and Montain Waves	Catastrophic		x				x	

Table 14: Identfied Safety Issues

First, Considering ICAO reactive safety information, the regional operational safety risks identified were the Loss of Control-in Flight (LOC-I) and runway safety (RE/ARC). Considering also the reactive and proactive safety information, safety events identified which could lead to the potential accident outcomes of Controlled Flight Into Terrain (CFIT), Mid Air Collision (MAC), and runway incursion (RI) as detailed in the above table of feared consequences" of the risk portfolio of DGAC France. Therefore, the CFIT, MAC, RI were also considered as regional operational safety risks due to the potential risk of these type of accidents though the MID States did not experience those accidents during the period 2015-2019.
Based on the analyses of reactive and proactive safety information, it is concluded that the regional operational safety risks for the MID Region are:

1. Loss of Control-In Flight (LOC-I);
2. Runway Safety (RS); mainly (RE and ARC during landing);
3. Controlled Flight into Terrain (CFIT);
4. Mid-Air Collision (MAC); and
5. Runway incursion

In addition to this, main safety isuses have been identified and their potential outcomes as detailed in the table 14.

1. **Loss of control inflight (LOC-I)**

Loss of control usually occurs because the aircraft enters a flight regime that is outside its normal envelope, usually, but not always, at a high rate, thereby introducing an element of surprise for the flight crew involved. Prevention of loss of control is a strategic priority. During 2015-2019 aircraftupset, or loss of control contributed to two fatal accidents.

2. Runway Excursions (RE):

RE is a veer or overrun off the runway surface. RE events can happen during take-off or landing. During the period 2015-2019, Runway Excursions and abnormal runway contact accidents and serious incidents mainly occurred in the landing phase of flight. This includes materialized runway excursions, both high and low speed, and occurrences where the flight crew had difficulties maintaining the directional control of the aircraft or of the braking action during landing, where the landing occurred long, fast, off-cantered or hard, or where the aircraft had technical problems with the landing gear (not locked, not extended or collapsed) during landing.

3. MID-Air Collision (MAC)

Refers to the potential collision of two aircraft in the air. It includes direct precursors such as separation minima infringements, genuine TCAS resolution advisories, or airspace infringements. Although there have been no aeroplane mid-air collision accidents in recent years within the MID States, this key risk area has been raised by some MID States. This is one specific safety issue that is the main priority in this key risk area. However, additional data is needed for further analysis to identify the underlying safety issues.

4. Controlled Flight Into Terrain (CFIT)

It comprises those situations where the aircraft collides or nearly collides with terrain while the flight crew has control of the aircraft. It also includes occurrences, which are the direct precursors of a fatal outcome, such as descending below weather minima, undue clearance below radar minima, etc. There was no fatal accident involving MID States operators during this period. This key risk area has been raised by some MID States and in other parts of the world that make it an area of concern. However, additional data is needed for further analysis to identify the underlying safety issues.

5. Runway incursion (RI)

A Runway Incursions refers to the incorrect presence of an aircraft, vehicle or person on an active runway or in its areas of protection. Their accident outcome is runway collisions. While there were no fatal accidents or accidents involving MID States operators in the last years involving runway collision, the risk of the reported occurrence demonstrated to be very real. In addition to this, MID States should provide further data analysis regarding runway incursion to identify the root causes and associated safety issues.

4.2 Organizational issues

Organizational issues are systemic issues which take into consideration the impact of organizational culture, and policies and procedures on the effectiveness of safety risk controls. Organizations include entities in a State, such as the civil aviation authority (CAA) and service providers, such as operators of aeroplanes, ATS providers, and operators of aerodromes. Organizations should identify hazards in systemic issues and mitigate the associated risks to manage Safety. A State's responsibilities for the management of Safety comprise both safety oversight and safety management, collectively implemented through an SSP.

4.2.1 Improve States' Safety Oversight capabilities

USOAP-CMA audits had identified that State's inability to effectively oversee aviation operations remains a global concern. In respect of MID Region, the regional average overall Effective

Implementation (EI) (13 out of 15 States have been audited) is 75.59 %, which is above the world average 68.39 % (as of May 5 2020). Three (3) States are currently below EI 60%.
All eight areas have an EI above 60%. However, the areas of AIG and ANSstill need more improvement. Regarding the Critical Elements (CEs), CE4 (Qualified technical personnel) improved and is above 60% (61.26%) EI, whereas CE8 (resolution of safety issues) is the only one below EI 60% (58. 89%) EI.
Moreover, the effective implementation in certification, surveillance, and resolution of Safety concerns need to be improved.

4.2.2 Improve Safety Management

States should build upon fundamental safety oversight systems to fully implement SSPs according to Annex 19; States shall require that applicable service providers under their authority implement an SMS. The average EI for SSP foundation PQs for States in the MID Region is 76, 21%.

An SSP requires increased collaboration across operational domains to identify hazards and manage risks. Aviation authorities and organizations should anticipate new emerging threats and associated challenges by developing SRM principles. Implementation of SSP is one of the main challenges faced by the State in the MID Region. The RASG-MID addresses the improvement of SSP implementation in the MID Region as one of the top Safety Enhancement Initiatives (SEIs). In connection with this, the RSC/7 endorsed the MID Region Safety Management Implementation Roadmap and the establishment of the Safety Management Implementation Team (SMIT) to support MID States in the implantation of the SSP in an effective and efficient way. Moreover, the RASG-MID also supported the establishment and activation of the MENA RSOO, with a primary objective to assist member States to develop and implement SSP; and Several Safety Management Workshops, training courses, and meetings have been organized to support the implementation of SSP/SMS and address the challenges and difficulties, as well as sharing of experiences and best practices.

4.3 Emerging Safety risks

Emerging safety issues are risks that might impact Safety in the future, these may include a possible new technology, a potential public policy, a new concept, business model or idea that, while perhaps an outlier today, could mature and develop into a critical mainstream issue in the future or become a major trend in its own right. Therefore, it is important that the international aviation community remain vigilant to identify emerging safety issues and develop mitigations to address them. Failure to address emerging safety issues can affect a State, region or industry's ability to mitigate the safety risks.

4.3.1 GNSS Outages/ Vulnerability

Between 2015 and 2018, GPS outages accounted for 92 reported incidents. The most frequent GNSS outages problems were reported by air operators. The reports were mainly located in the FIR Middle East- Europe. The most affect geographical area was Eastern Mediterranean related to the political conflict in the region. The most frequent GPS outage problems reported by the air operators:

- Failure of one or both GPS boxes
- Disagreement between GPS positions and the NAV FMSs
- Unable to fly RNP and request foe radar vectoring
- Loss of TAWS/HTAWS
- Larger than normal GPS position errors prior to the loss of GPS
- Loss of ADS-B Out over a wide area.

- Missing/ degraded ADS- B In targets
- GPS/SBAS Nav/ GPS Measurements
- Loss of GPS position to SATCOM
- No GPS position for ELT
- Reduced ability to determine flight phase

4.3.2 COVID-19 pandemic outbreak

The impact of the coronavirus disease (COVID-19) pandemic on global air transport is without precedent. Airports have seen a -28.4 per cent decline in global passenger traffic volumes for the first quarter of 2020, equivalent to a reduction of 612 million passengers in absolute terms. These volumes (domestic and international traffic) are expected to decrease by -50.4 per cent for 2020 as a whole as compared to 2019 (ACI, may release). ICAO estimates that by the end of 2020, the COVID-19 impact on scheduled international passenger traffic could reach reductions of up to 71 per cent of seat capacity and up to 1.5 billion passengers globally (ICAO). Airlines and airports face a potential loss of revenue of up to USD 314 billion and USD 100 billion respectively, for 2020. (IATA, April, release).

It was noted that the rapidly evolving COVID-19 crisis heavily affected all aspects of civil aviation. The urgent need to coordinate all efforts to reduce the risks of the spread of COVID-19 by air transport and to protect the health of air travellers and aviation personnel, while maintaining essential aviation transport operations and ensuring an orderly return to normal operations in due course was underlined. In connection with this, the High-Level MID Regional Meeting/Teleconference between ICAO, AACO, ACAO and IATA on COVID-19 Crisis Management came out with proposal to establish a MID Region Recovery Plan Task Force (RPTF) which was then endorsed by the Middle East DGCA Meeting/Teleconference held on April 23 2020.

The main objective of the RPTF was to monitor global restart and recovery developments and ensure the harmonization, and where necessary regional customization, of the implementation of these global developments at the Regional level. In addition, the RPTF is to play an advisory role to the MID states, assisting in the formulation of regional restart and recovery plans, and implementing regional activities in support of its objectives, taking into consideration the work done at the global level in order to ensure alignment and avoid duplication of efforts.

The RPTF established 4 technical work streams namely: Public Health Requirements, Operational Safety Measures, Airport & Passengers Facilitation, and Air Navigation Services/Air Traffic Management. Each work stream identified key atctvies and their respective actions and deliverables/outcomes.

5. Final Conclusions

One of the GASP goals is for States to improve their effective safety oversight capabilities and to progress in the implementation of SSPs. In addition to addressing organizational/systemic safety issues, GASP addresses high-risk categories of occurrences, which are deemed global safety priorities. These categories were determined based on actual fatalities from past accidents, high fatality risk per accident, or the number of accidents and incidents.

Following the analysis of the reactive and proactive/predictive safety information provided by ICAO, IATA, and the MID Region States for the period 2015 - 2019, it was concluded that the safety priorities defined for the MID Region are:

A. Regional operational Safety risks

1. Loss of Control-Inflight (LOC-I);
2. RE and ARC during landing;
3. Controlled Flight Into Terrain- (CFIT);
4. Mid-Air Collision- (MAC); and
5. Runway incursion

B. Organizational issues:

1. States' Safety Oversight capabilities
2. Safety Management

C. Emerging Safety risks

1. GNSS outage
2. COVID-19 Pandemic outbreak

In line with GASP 2020-2022, the 1st MID RASP edition is being drafted to facilitate communication and understanding with all regional and external stakeholders and to develop Safety Enhancement Initiatives (SEIs) in order to address the MID Region safety priorities defined in the Regional Annual Safety Report including organizational issues, regional operational safety risks, and emerging risks. Therefore, the MID-RASP has been organized in a simple, systematic and practical manner to cater to various levels of stakeholder.

Appendix A: CICTT Occurrence Categories

Code	Description
ADRM	Aerodrome
AMAN	Abrupt Maneuver
ARC	Abnormal runway contact
BIRD	Bird
CABIN	Cabin safety events
CFIT	Controlled flight into/towards terrain
CTOL	Collision with obstacles during take-off and landing
EVAC	Evacuation
F-NI	Fire/smoke (non-impact)
F-POST	Fire/smoke (post-impact)

GCOL	Ground collision
ICE	Icing
LOC-I	Loss of control in-flight
LOC-G	Loss of control-ground
OTHR	Other
RAMP	Ground handling
RE	Runway excursion
SCF-NP	System/component failure (non-power plant)
SCF-PP	System/component failure (power plant)
TURB	Turbulence encounter
UNK	Unknown or undetermined
USOS	Undershoot/overshoot
WILD	Wildlife
WSTRW	Wind shear or thunderstorm

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The RASG-MID thanks all those who contributed to the elaboration of this Annual Safety Report and provided necessary support and information to the members of the Annual Safety Report Group (ASRG). Special thanks go to:

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