International Civil Aviation Organization

RASG-MID Steering Committee

Seventh Meeting (RSC/7)
(Cairo, Egypt, 3 – 5 March 2020)

Agenda Item 3: Regional Performance Framework for Safety

OUTOCMES OF THE FIRST MEETING OF THE ANNUAL SAFETY REPORT GROUP (ASRG/1)

(Presented by the Secretariat)

SUMMARY

This paper presents the outcome of the ASRG/1 meeting, including the presentation of the Eighth MID Annual Safety Report, for endorsement.

Action by the meeting is at paragraph 3.

REFERENCES

- ASRG/1 Report
- The Eighth MID Region Annual Safety Report Draft

1. INTRODUCTION

1.1 The First meeting of the Annual Safety Report Group (ASRG/1) was held at the ICAO Middle East Regional Office in Cairo, Egypt, 25-27 November 2019.

1.2 The meeting was attended by a total of fifteen (15) participants from four (4) States (Egypt, Iraq, Saudi Arabia and Yemen) and three (3) International Organizations/Industries (Boeing, IATA and IFALPA).

1.3 The majority of ASRG members did not attend the meeting, which raised concerns about the commitment and effectiveness of the Group.

2. DISCUSSION

2.1 Mr. Theeb Abdullah Al Otaibi, Director of Safety Analysis, Aviation Investigation Bureau (AIB), Saudi Arabia, and Capt. Mohamed Salah Abdel Aziz, Safety General Director, Egyptian Civil Aviation Authority (ECAA), were unanimously elected as the Chairperson and Vice-Chairperson of the Annual Safety Report Group (ASRG), respectively.

Eighth MID Annual Safety Report

2.2 The meeting noted that the 8th MID-ASR provides analysis of the accidents, serious incidents and incidents that occurred in the MID Region for the period (2014-2018). Based on the analysis of the reactive and proactive safety information for the period 2014-2018, and in accordance with the agreed new methodology for the risk assessment, the meeting agreed that the main focus areas in the MID Region are:

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

2.3 The meeting consolidated the list of Emerging Risks using the ADREP Taxonomy, based on the previous and the newly identified emerging risks. Accordingly, the meeting agreed to the following list of emerging risks

1. Fire/Smoke (non-impact) – (F-NI);
2. Wake turbulence;
3. Runway Incursion-(RI);
4. Bird Strike- (BIRD);
5. Security- (SEC);
6. System Component Failure- Power Plant - (SCF-PP)
7. System Component Failure- Non-Power Plant (SCF-NP); and
8. Windshear

2.4 With respect to the USOAP CMA, the regional average overall Effective Implementation (EI) in the MID Region is 75.23 %, which is above the world average 68.53% (as of 25 Sep 2019). Three (3) States are currently below EI 60%.

2.5 Based on the foregoing, the meeting agreed that the MID Office, in coordination with the ASRG Chairperson, finalize the Eighth Edition of the MID-ASR in order to be presented to the RSC/7 meeting (Cairo, Egypt, March 2020) for endorsement. The meeting may wish to review the 8th MID-ASR and agree to the following Draft Conclusion:

WHY	To endorse the 8th ASR
What	8th ASR
Who	RSC/7
When	March 2020

DRAFT RSC/7 CONCLUSION 7/XX: 8TH ASR

*That, the Eighth MID Annual Safety Report at **Appendix A** is endorsed.*

Development of the Ninth MID Annual Safety Report

2.6 In the same vein, the meeting reiterated the importance of sharing the number of occurrences and their safety data analysis by the States in order to produce improved Annual Safety Reports in the future. Accordingly, the meeting agreed to the following Draft Conclusion:

WHY	To produce improved annual safety reports in the future
What	Provision of the number of accidents, serious incidents and incidents, safety data analysis, and their associated safety recommendations related to the agreed occurrence categories.
Who	States
When	March 2020

DRAFT CONCLUSION 1/1: SHARING OF SAFETY DATA ANALYSIS

*That, States be urged to provide the ICAO MID Office by **March 2020** with the number of accidents, serious incidents and incidents, safety data analysis, and their associated safety recommendations related to each occurrence category in **Appendix B** for the past 5 years (2015 – 2019) and using the Template in **Appendix C**.*

2.7 The meeting may wish to note that the ICAO MID office sent a State Letter Ref.: ME 4/1.6–19/402 dated 29 December 2019 on the sharing of the safety data analysis.

2.8 The meeting agreed that in the 9th MID-ASR, the proactive and predictive safety parts should be combined; this is in line with the latest developments of Annex 19 and the 4th Edition Safety Management Manual- SMM (ICAO Doc 9859).

2.9 The meeting highlighted the main challenges facing the MID-ASRG for the development of the ASRs, in particular:

- low level of serious incidents and incidents reporting by the States;
- lack of shared safety data analysis and safety recommendations by the States; and
- low participation in the meeting from the States and the organization

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

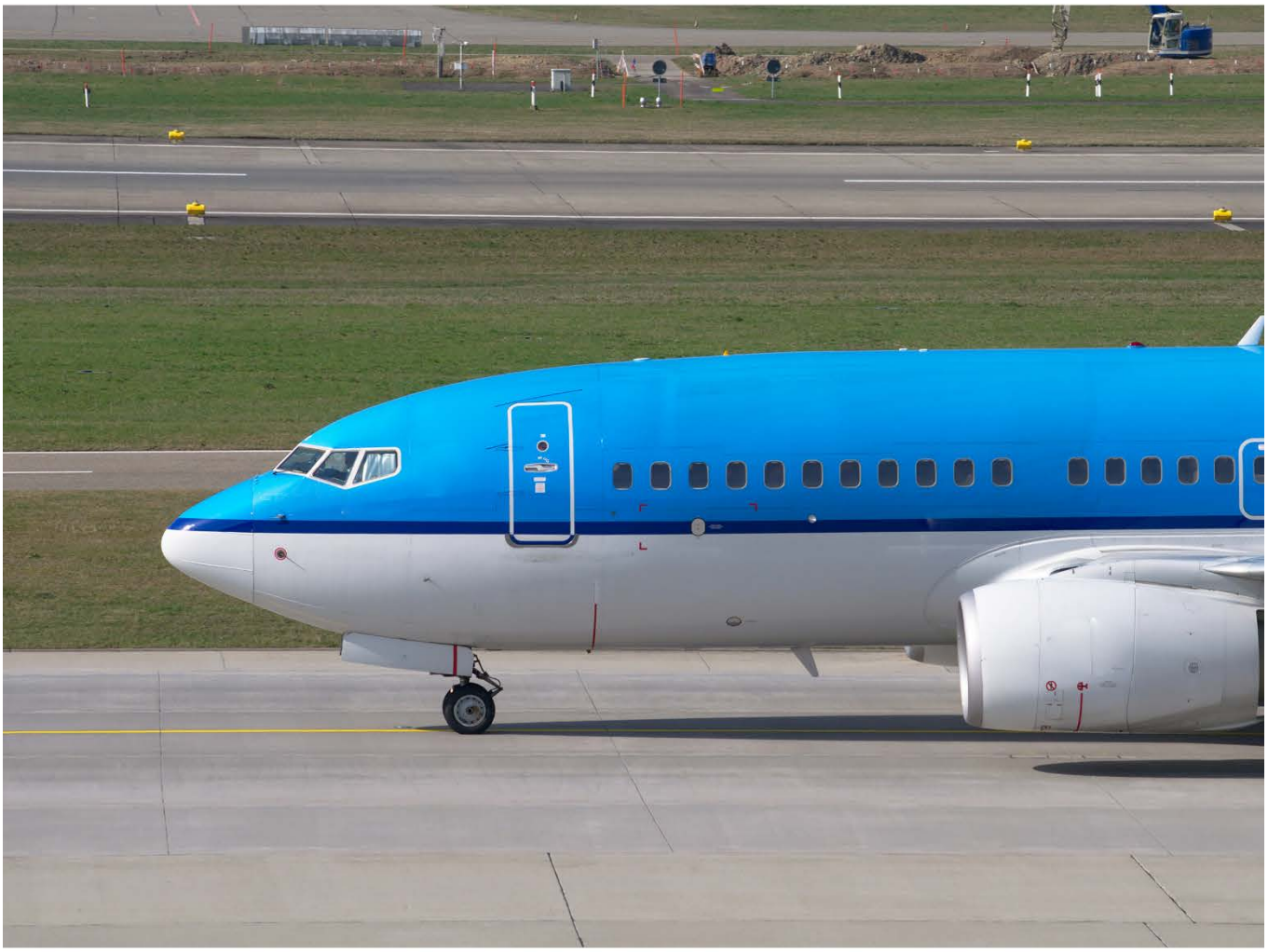
a) review and endorse the 8th MID-ASR, at **Appendix A**; and

b) urge States and stakeholders to provide the ICAO MID Office with required data for the development of the MID-ASRs; and support the MID-ASRG activities.

ICAO

SAFETY

MID Region Annual Safety Report



Eighth Edition March 2020

Reference Period (2014 - 2018)

ICAO

Regional Aviation Safety Group – Middle East (RASG-MID)
Eight Edition, xxx 2019

Contents

1. 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 Accident and Incident Investigation Group (AIIG), and the Aerodrome (APIG). 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 safety focus areas 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.

2. Executive Summary

Over the last five years, the global scheduled commercial international operations accounted for approximately 37.7 million departures in 2018, compared to 31.9 million departures in 2014. The MID Region showed a stable growth in traffic volumes. Total scheduled commercial departures in 2018 accounted approximately for 1.4 million departures compared to 1.15 million departures in 2014. In terms of aircraft accident, the MID Region had an accident rate of 2.3 accidents per million departures in 2018, which increased compared to 1.45 in 2017. The MID Region accident rate in 2018 is still below the global accident rate which is 2.6 accidents per million departures.

However, the 5-year average accident rate for 2014-2018 is 2.6, which is almost similar to the global average rate (2.58) for the same period. The MID Region had a fatal accident rate of 0.71 accidents per million departures in 2018, which increased compared to the previous year (2017). However, the 5-year average fatal accident rate for 2014-2018 is 0.78, which is above the global average rate (0.45) for the same period. The MID Region had no fatal accident in 2017. However, four fatal accidents occurred in 2014, 2015, 2016, and 2018. The 2014 accident caused 38 fatalities, 224 fatalities were registered in 2015, 1 fatality in 2016, and the year 2018 caused 66 fatalities.

Based on the analyses of all accidents, serious incidents, and incidents data, it is concluded that the Focus Areas for the MID Region are:

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

Emerging risks have been identified, as follows:

1. Security risks with impact on safety-SEC;
2. Fire/Smoke-non impact- (F-NI);
3. Runway Incursion- (RI);
4. Birdstrike- (BIRD); and
5. Wake Turbulence (Vortex).

The regional average overall Effective Implementation (EI) in the MID Region (13 out of 15 States have been audited) is 75.23 %, which is above the world average 68.53% (as of 25 Sep 2019). Three (3) States are currently below EI 60%.

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% (61.71%) EI, whereas CE8 (resolution of safety issues) is the only one below EI 60% (59. 47%).

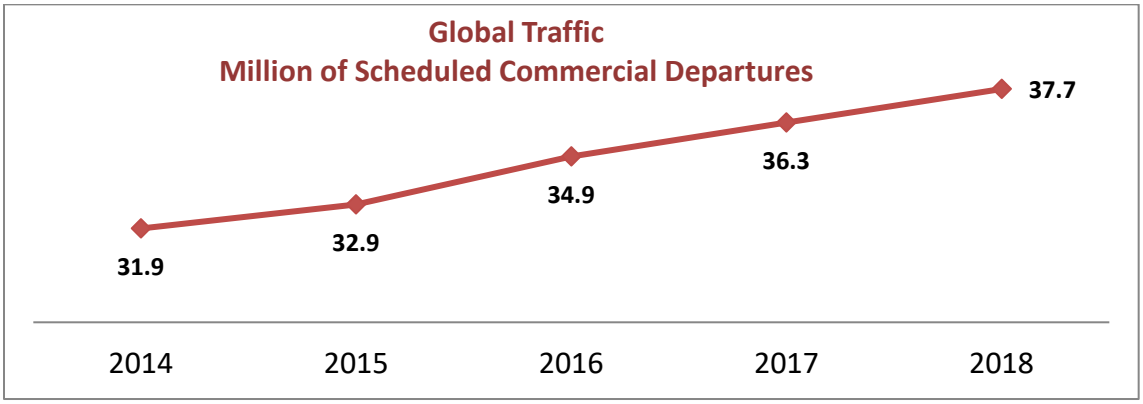
Implementation of SSP is one of the main challenges faced by States in the MID Region. The RASG-MID addresses the improvement of SSP implementation in the MID Region as one of the top Safety Enhancement Initiatives (SEIs). Currently, States in the MID Region could not reach to full implementation of 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.

Several activities took place to support the implementation of SSP/SMS, including the new ICAO Safety Management Training Programme (SMTP), SSP implementation Workshops, and meetings in order to address the challenges and difficulties, as well as sharing of experiences and best practices.

3. Traffic Volumes

Global Traffic

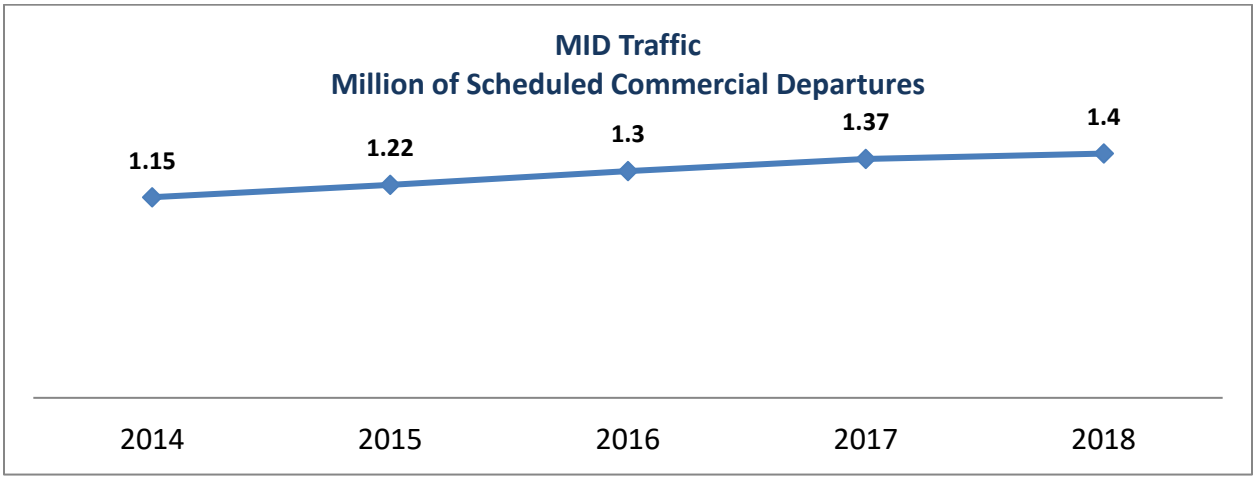
The global scheduled commercial international operations accounted for approximately 37.7 million departures in 2018, compared to 31.9 million departures in 2014.



Graph 1: Global Traffic Volume (Source iSTARSs of 23 Sep 2019)

MID Traffic

The MID Region shows a stable growth in traffic volumes. Total scheduled commercial departures in 2018 accounted approximately for 1.4 million departures compared to 1.15 million departures in 2014.



Graph 2: MID Traffic Growth (Source iSTARSs of 23 Sep 2019)

4. Reactive Safety Information

4.1 Safety Risk Assessment Methodology

In order to facilitate the identification and prioritization of the main Regional Risk Category Focus Areas (FAs), accidents and serious incidents are categorized in terms of frequency and severity. The severity assessment is based on the fatalities, injuries and damage to aircraft, property and equipment. (For Frequency rating: 1 is the most frequent and 6 is the least frequent. For Severity: 1 is the most severe and 4 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 focus areas (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

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

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

Nb	Identfication 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 surafce 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

4.2 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.

Note: *The accident and serious incidents 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).*

The main part of this Section provides analysis of the accidents that occurred in the MID Region (State of Occurrence) for the period (2014-2018), which is used for monitoring the progress of achieving the Safety Targets in the MID Region Safety Strategy.

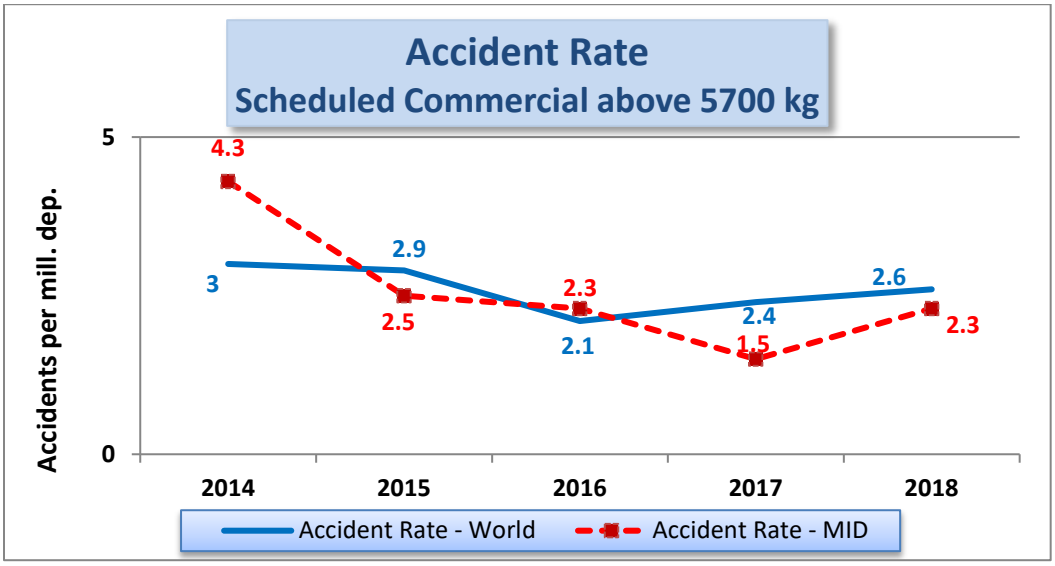
In addition, it provides data analysis regarding accidents and serious incidents of aircraft registered in the MID Region (State of Registry) as well as for the MID air operators (State of the Operator) using the same criteria mentioned above. It is to be highlighted that the State of registry and State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

4.2.1 MID State of Occurrence

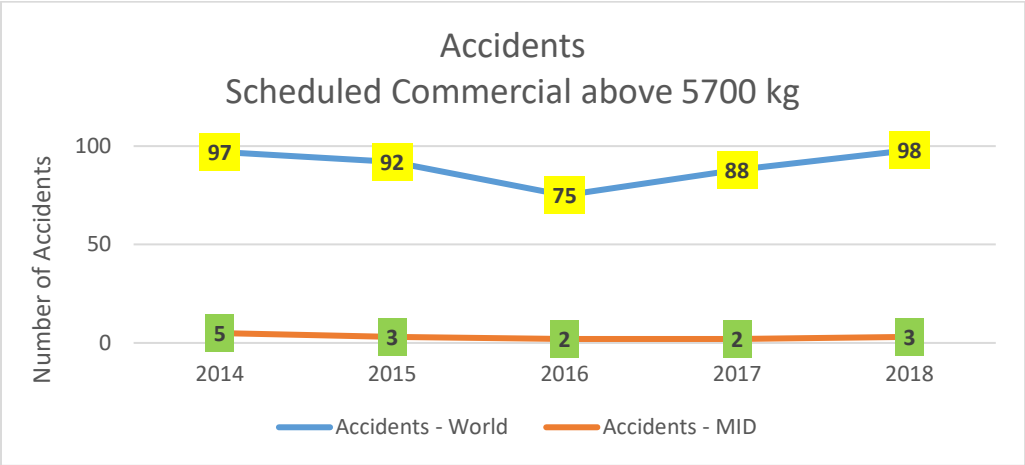
Accidents Rates and Fatalities

The Graph 3 shows that the MID Region had an accident rate of 2.3 accidents per million departures in 2018, which increased compared to the previous year (2017). However, the 5-year average accident rate for 2014-2018 is 2.6, which is almost similar to the global average rate (2.58) for the same period.

The Graph 4 shows that 15 accidents occurred in the MID Region during the period (2014-2018), whereas (450) accidents occurred globally.

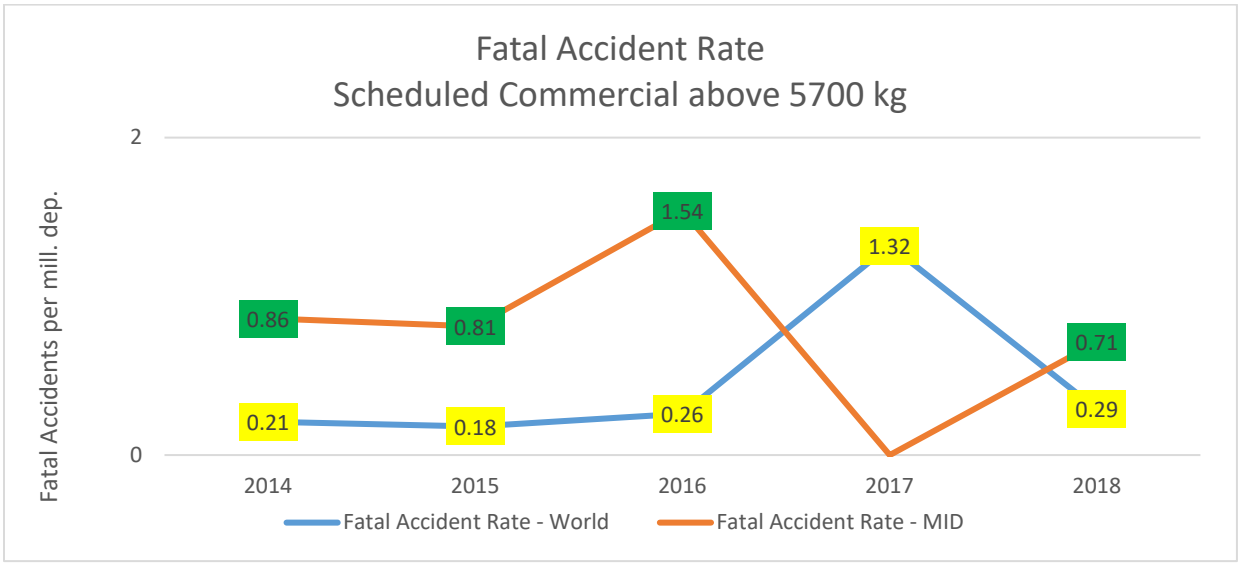


Graph 3: Global Accident Rate Vs MID Accident Rate (Source iSATRS as of 24 Sep 2019)

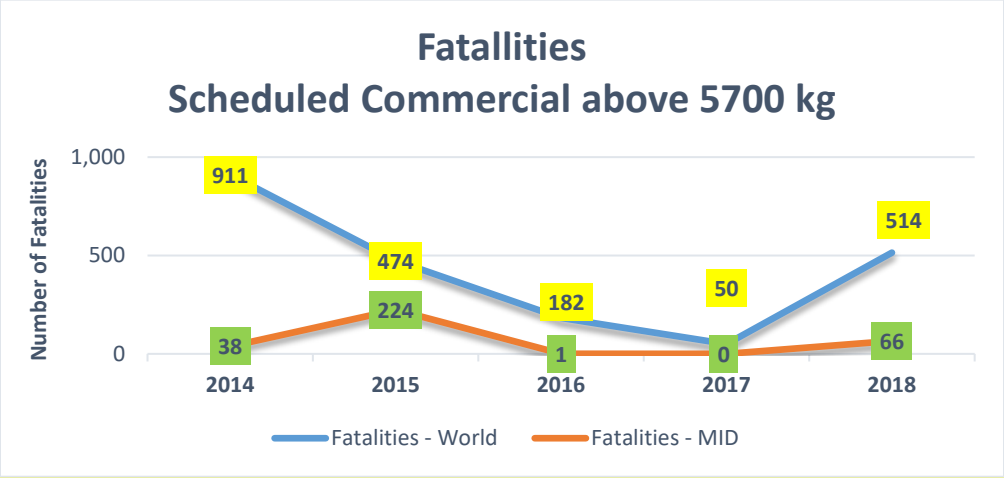


Graph 4: Number of MID Accidents Vs. Number of Global Accidents Per Year (Source: iSTARS as of 24 sep 2019)

The Graph 5 shows that the MID Region had a fatal accident rate of 0.71 accidents per million departures in 2018, which increased compared to the previous year (2017). However, the 5-year average fatal accident rate for 2014-2018 is 0.78, which is above the global average rate (0.45) for the same period. The MID Region had no fatal accidents in 2017. However, four fatal accidents occurred in 2014, 2015, 2016, and 2018. The 2014 accident caused 38 fatalities, 224 fatalities were registered in 2015, 1 fatality in 2016, and the year 2018 caused 66 fatalities as shown in Graph 6.

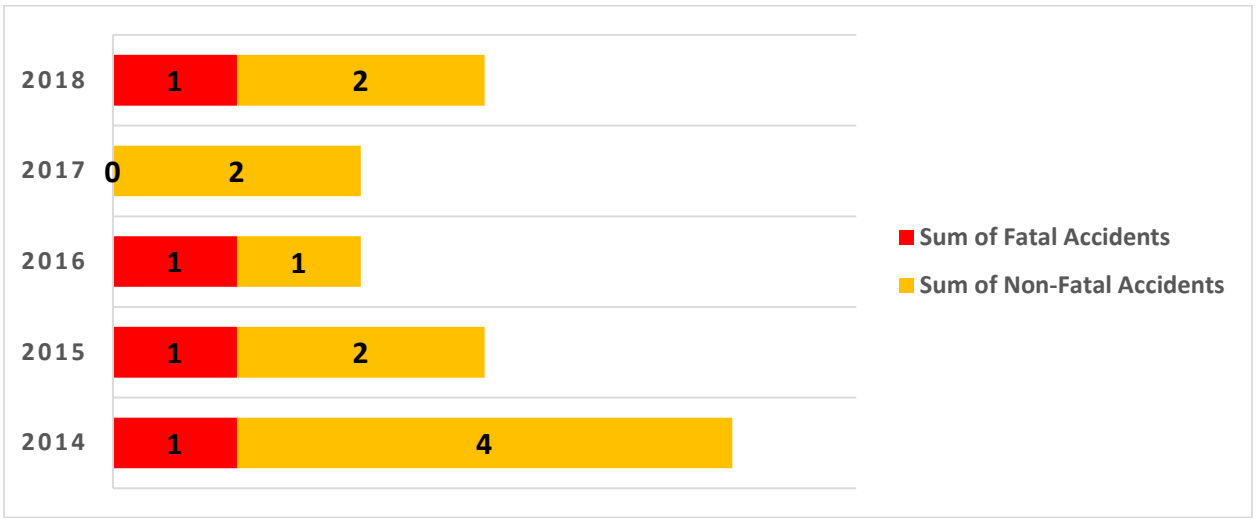


Graph 5: Global Fatal Accident Rate Vs MID Fatal Accident Rate (Source: iSTARS as of 24 Sep 2019)



Graph 6: Number of MID Fatalities Vs. Global Fatalities (Source: iSTARS as of 24 Sep 2019)

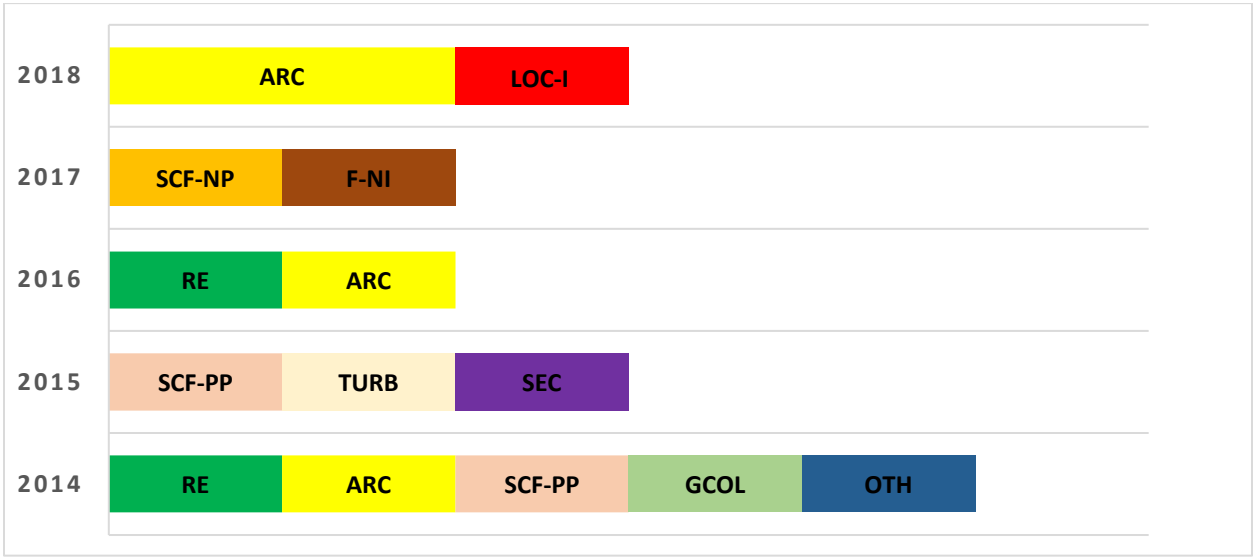
The Graph 7 shows that 15 accidents occurred during the period of 2014-2018 and no fatal accident occurred during the year of 2017. Four fatal accidents occurred respectively during 2014, 2015, 2016, and 2018.



Graph 7: Number of Fatal Accidents Vs Non-Fatal Accidents Per Year (2014-2018) (Source: iSTARS as of 24 Sep 2019)

Occurrence Category

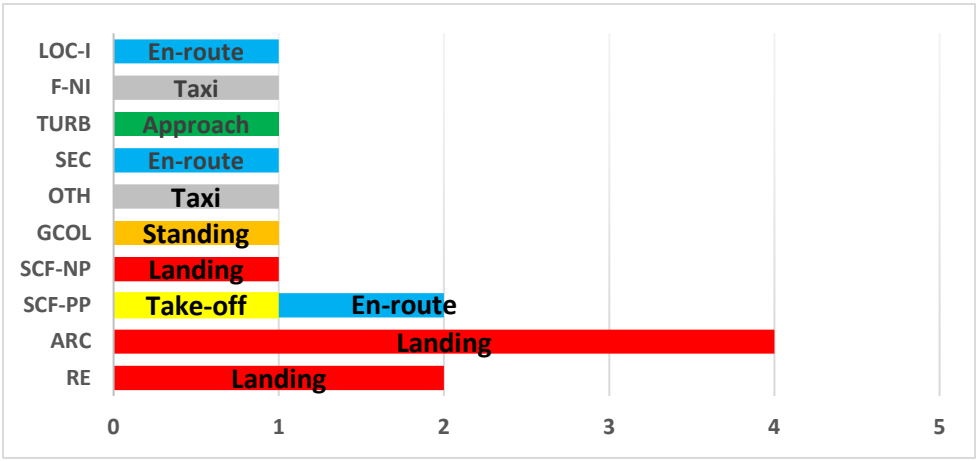
The Graph 8 indicates that during the period (2014-2018), the CFIT accidents has not been reported. However, the Loss of control-inflight (LOC-I), the engine failure/malfunction (SCF-PP), Non-Power plant (SCF-NP), runway excursion (RE), abnormal runway contact (ARC), and security (SEC) events represent the main areas of concern.



Graph 8: Distribution of Occurrence Category Per Year (2014-2018) (Source: iSTARS as of 24 Sep 2019)

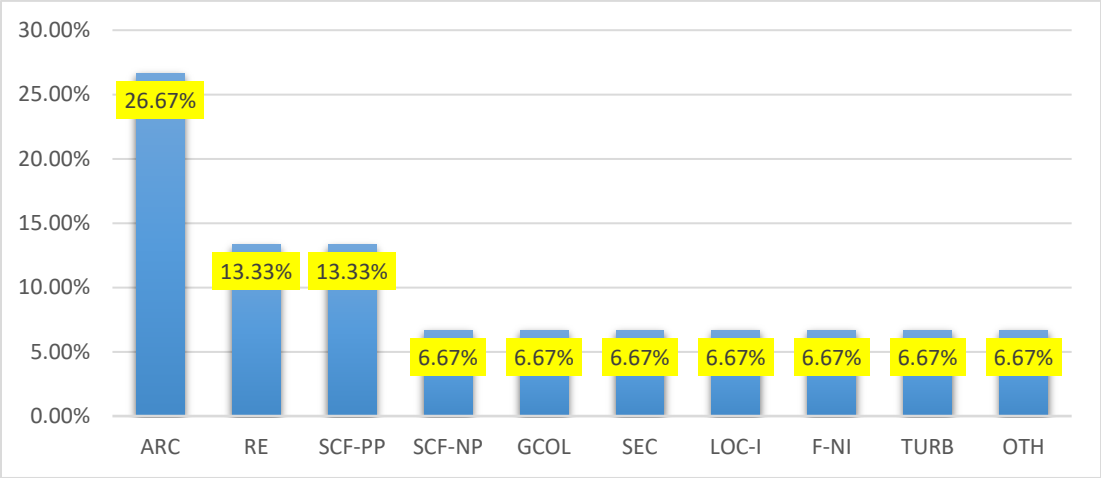
Phase of Flight

The Graph 9 shows that the majority of 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 engine failure/malfunction events occurred during take-off and En-route flight phases. The Loss of Control-Inflight (LOC-I) occurred during En-route flight phase.



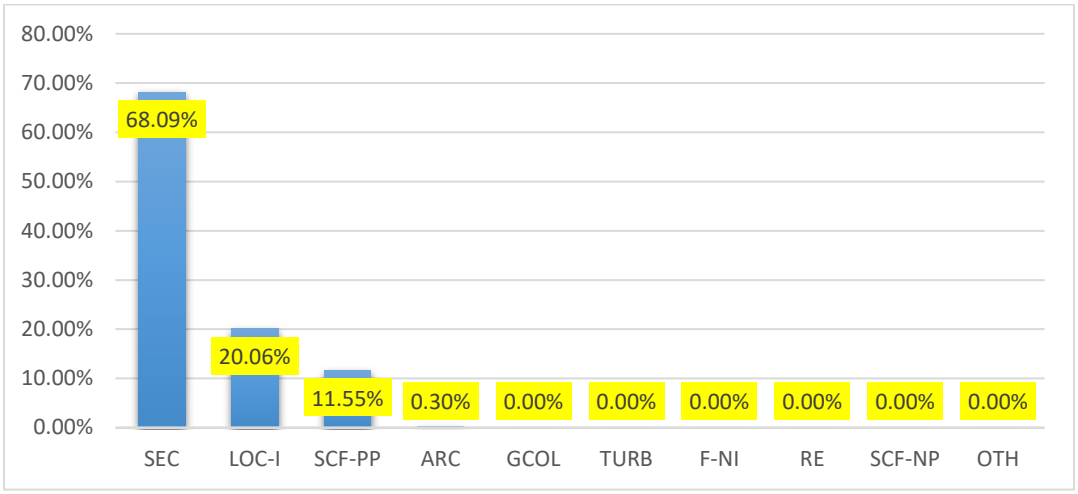
Graph 9: Distribution of Occurrence Category Per Phase of Flight (2014-2018) (Source: iSTARS as of 24 Sep 2019)

The Graph 10 shows that most of the accidents categories experienced during the 2014-2018 were the abnormal runway contact (ARC) and Runway Excursion (RE), followed by system component failures.



Graph 10: Occurrence Category Distribution as Percentage Per Accident (Source: iSTARS as of 24 Sep 2019)

The Graph 11 shows that the fatalities for the period 2014-2018 were mainly associated to the following Occurrence Categories: Security (SEC), Loss of Control-Inflight (LOC-I), and engine failure/malfunction (SCF-PP).



Graph 11: Fatalities Distribution as Percentage by Occurrence Category (2014-2018) (Source: Istars as of 24 Sep 2019)

Taking a more in-depth look at the fatal accidents and accidents for the MID Region (State of occurrence) for the period 2014-2018, 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. System Component Failure- Power Plant - (SCF-PP)

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

1. Runway Safety (RS) – including (RE, ARC, and GCOL);
2. System Component Failure – Power Plant (SCF-PP);
3. System Component Failure– Non-Power Plant (SCF-NP);
4. Fire/Smoke (F-NI); and
5. Turbulence Encounter (TURB)

Identification of the main Risk Areas based on the analysis of accident data related to the State of Occurrence (2014-2018)

To facilitate the identification of the safety priority areas; the safety risk assessment methodology is applied. Applying the "feared consequences" of the risk portfolio of DGAC France, the system component failure- Power Plant fatal accident has led to the potential outcome of Loss of control inflight (LOC-I), consequently, the SCF-PP was considered under the risk of loss of control-inflight. In addition, two fatal accidents had led to the LOC-I.

Main Risk Area	Frequency	Severity	Risk Level
Loss of Control-Inflight (LOC-I)	2	1	2
Runway Safety (RS)	1	3	3
Security (SEC)	3	1	3

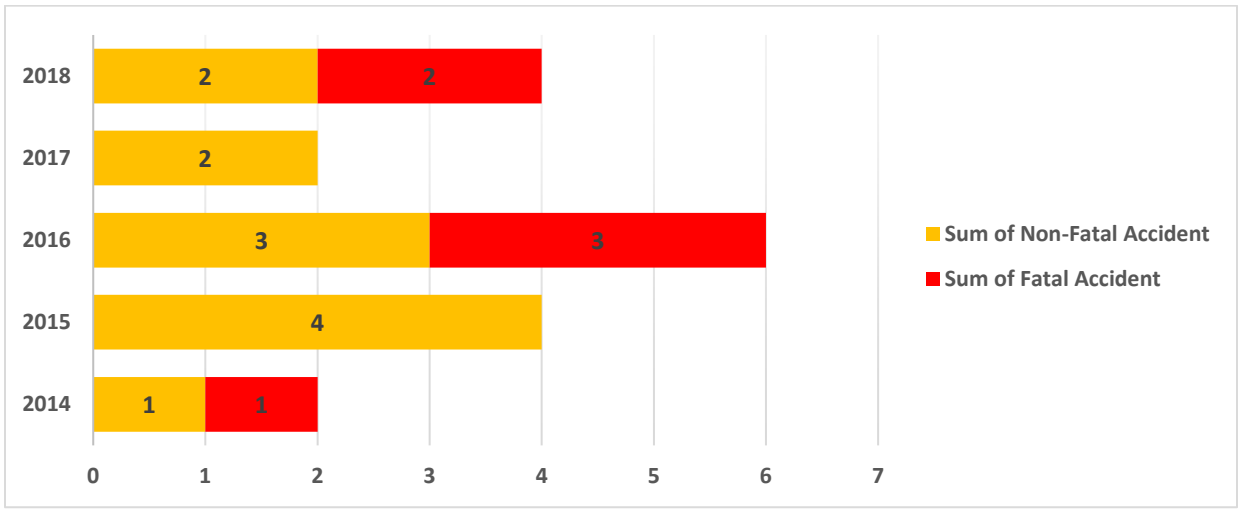
Therefore, the safety risk areas according to the State of occurrence's accidents data are

a) Loss Of Control -Inflight – (LOC-I);
b) Runway Safety (RS): Runway Excursion (RE) and Abnormal Runway Contact (ARC) during landing; and
c) Security related-(SEC).

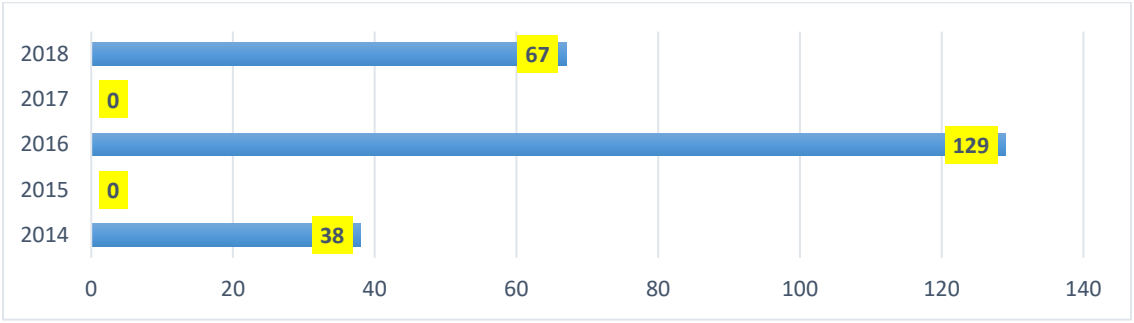
4.2.2 MID State of Registry and Operator

Accident Data Analysis

The 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 two fatal accidents were recorded during 2018, which indicated an increased number of fatal accidents in 2018 compared to the previous years. Three fatal accidents occurred in 2016 involving MID Operators and one in the year of 2014. In terms of fatalities, the Graph 13 shows that the four fatal accidents, which occurred in 2014 and 2016, resulted in 234 fatalities.



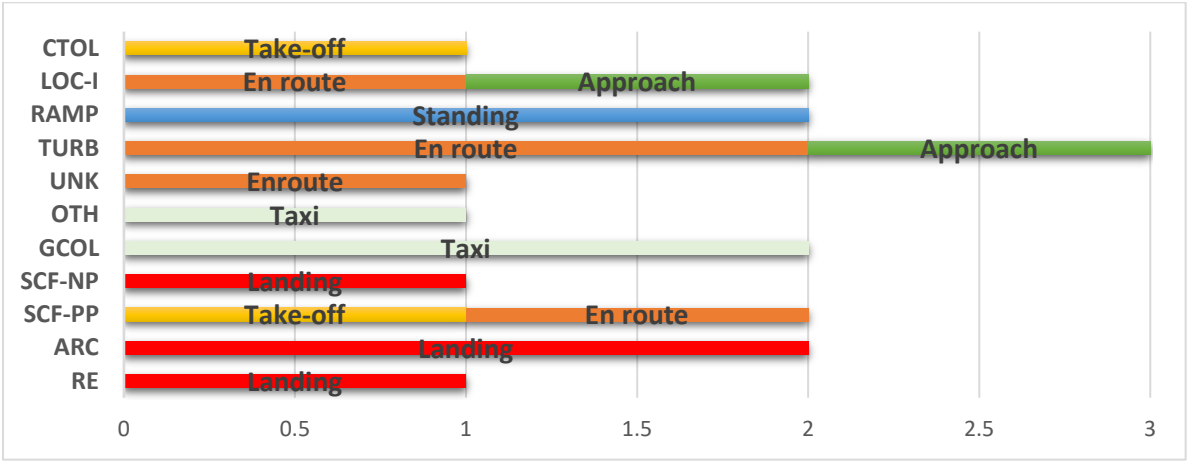
Graph 12: Number of Fatal and Non-Fatal Accidents per Year (2014-2018) (Source: iSTARS as of 24 Sep 2019)



Graph 13: Number of Fatalities per Year (2014-2018) (Source: iSTARS as of 24 Sep 2019)

Phase of Flight

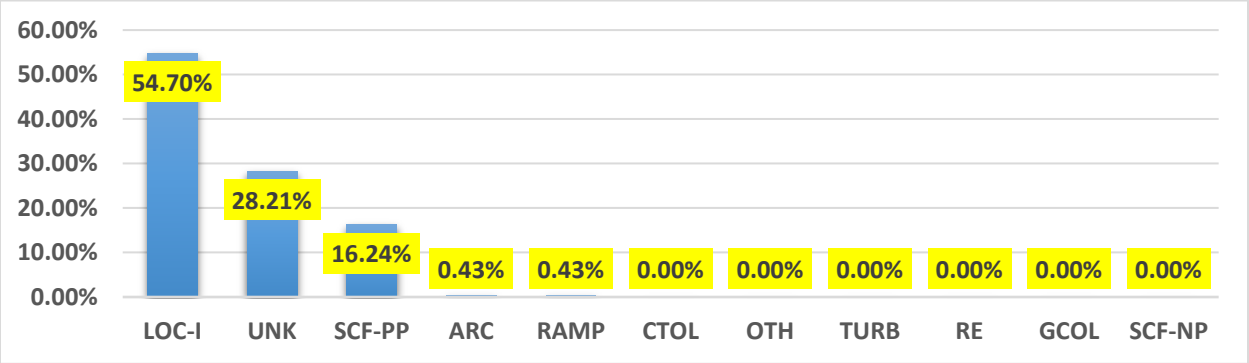
The Graph 14 shows that the majority of accidents related to Runway Excursion (RE), Abnormal Runway Contact (ARC), and system component failure- Non-power plant (SCF-NP) occurrence categories took place during landing flight phase. It was also noted that the engine failure/malfunction-related accident occurred during take-off (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 14: Distribution of the Number of Accidents Category per Phase of Flight (2014-2018) (Source: iSTARS as of 24 Sep 2019)

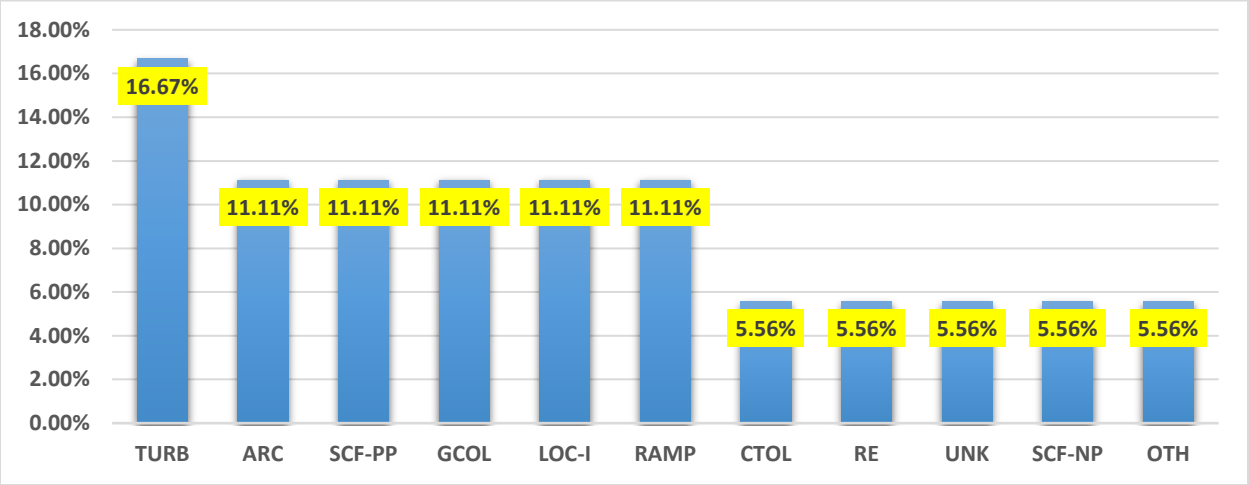
Occurrence Category

The Graph 15 shows the percentage of fatalities associated with the accident Categories for the period 2014-2018: Loss of Control in flight (LOC-I), Unknown (UNK), engine failure/malfunction (SCF-PP), Abnormal Runway Contact (ARC) and RAMP.



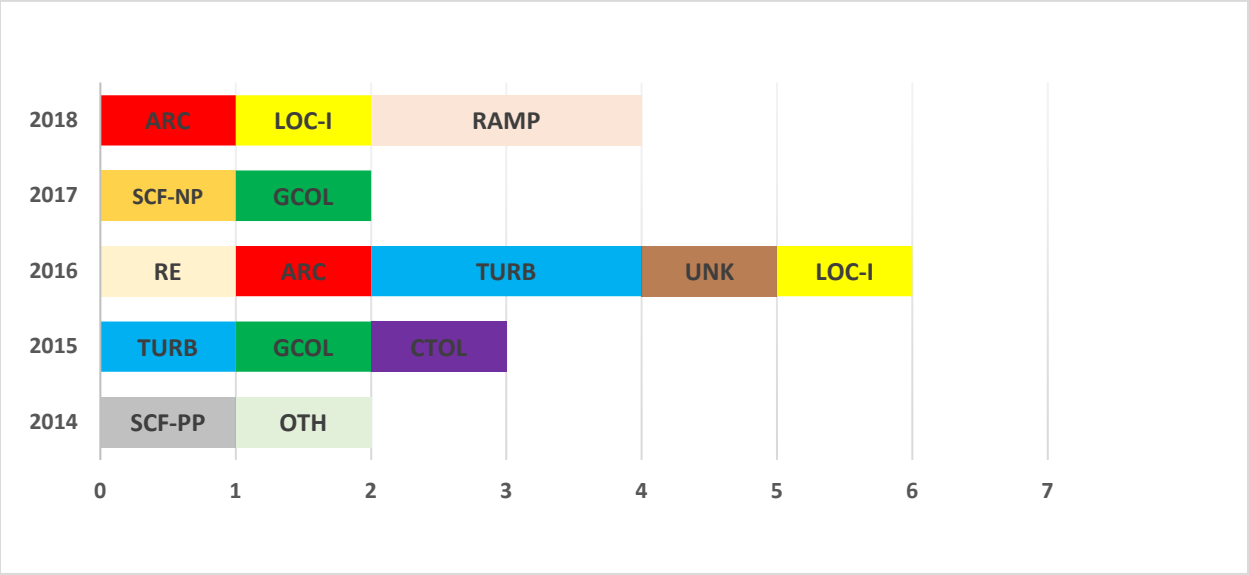
Graph 15: Fatalities Distribution as Percentage by Occurrence Category (2014-2018) (Source: iSTARS as of 24 Sep 2019)

The Graph 16 shows that most of the accidents categories experienced during the period 2014 – 2018 was Turbulence (TURB), followed by ARC, SCF-PP, LOC-I, GCOL and RAMP. However, considering that RE, GCOL, RAMP, 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 16: Accident Distribution as Percentage per Occurrence Category (2014-2018) (Source: iSTARS as of 24 Sep 2019)

During 2014-2018, no CFIT accident occurred. However, two LOC-I accidents had taken place during the period of 2016 and 2018. Engine failure/malfunction (SCF-PP), Runway Excursion (RE), Abnormal Runway Contact (ARC), and Turbulence (TURB) events were registered and are still prevailing.



Graph 17: Accident Category Distribution per Year (Source: iSTARS as of 24 Sep 2019)

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 2014-2018, the following is to be highlighted:

a) In terms of fatality, the fatal accidents categories in the MID Region for the period 2014 – 2018 are:

1. Loss Of Control- In-flight (LOC-I);
2. Unknown (UNK);
3. System Component Failure – Power Plant (SCF-PP); and
4. 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 2014 – 2018 are:

1. Runway Safety (RS) – (RE, ARC, GCOL, RAMP, 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 Risk Areas based on the analysis of safety data related to the State of registry and State of operator (2014-2018)

To facilitate the identification of the safety priority areas; the safety risk assessment methodology is applied. Applying of the "feared consequences" of the risk portfolio of DGAC France, the system component failure- Power Plant fatal accident has led to the potential outcome of Loss of control inflight,

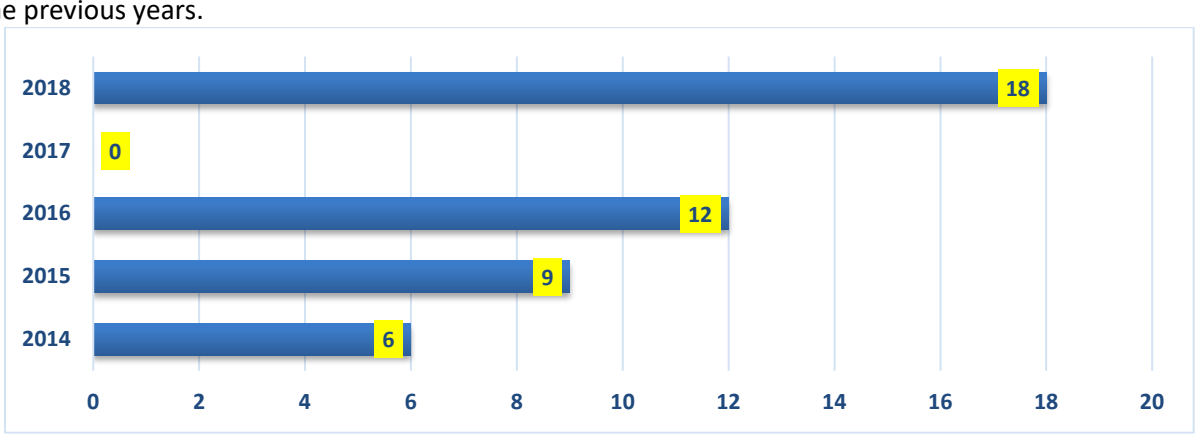
consequently, the SCF-PP was considered under the risk of loss of control-inflight. Therefore, the safety risk areas according to the State of registry and operator accidents data are:

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

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

Serious Incidents Data Analysis

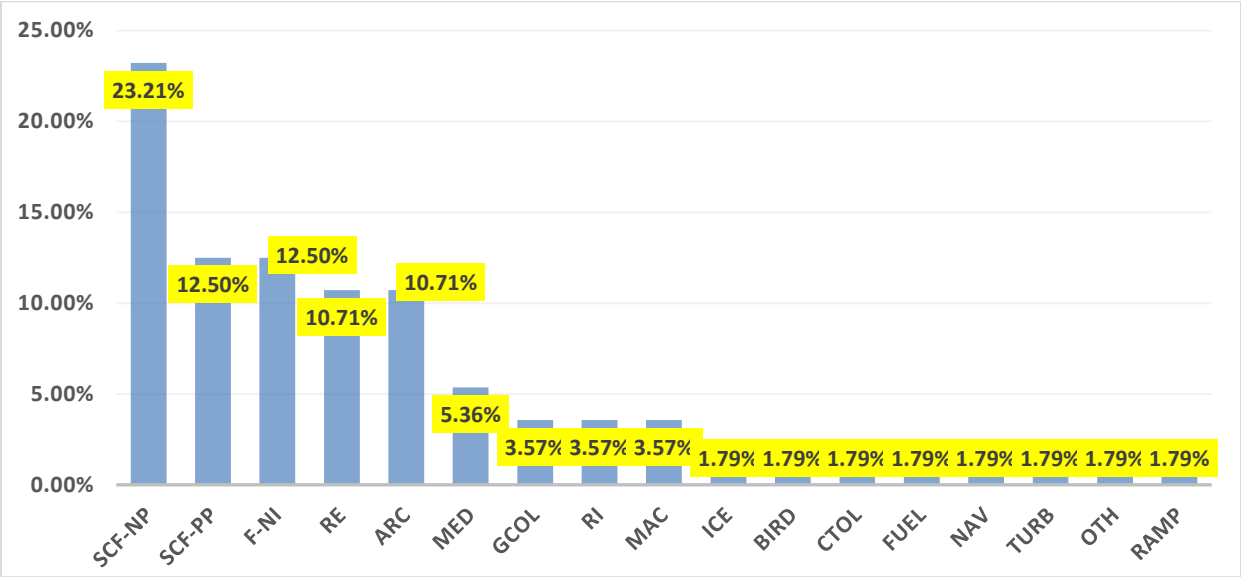
The Graph 18 shows that there were no reported serious incidents during the year of 2017 compared to the previous years.



Graph 18: Number of Serious Incidents per Year (2014-2018)

Occurrence Category

The Graph 19 shows that most of the serious incident categories experienced during the period 2014 - 2018 were the system component failures (PP and NP combined), followed by the fire/smoke; Runway Excursion and abnormal runway Contact categories. The near midair collision events have been recorded, but took place outside the MID Region airspace.



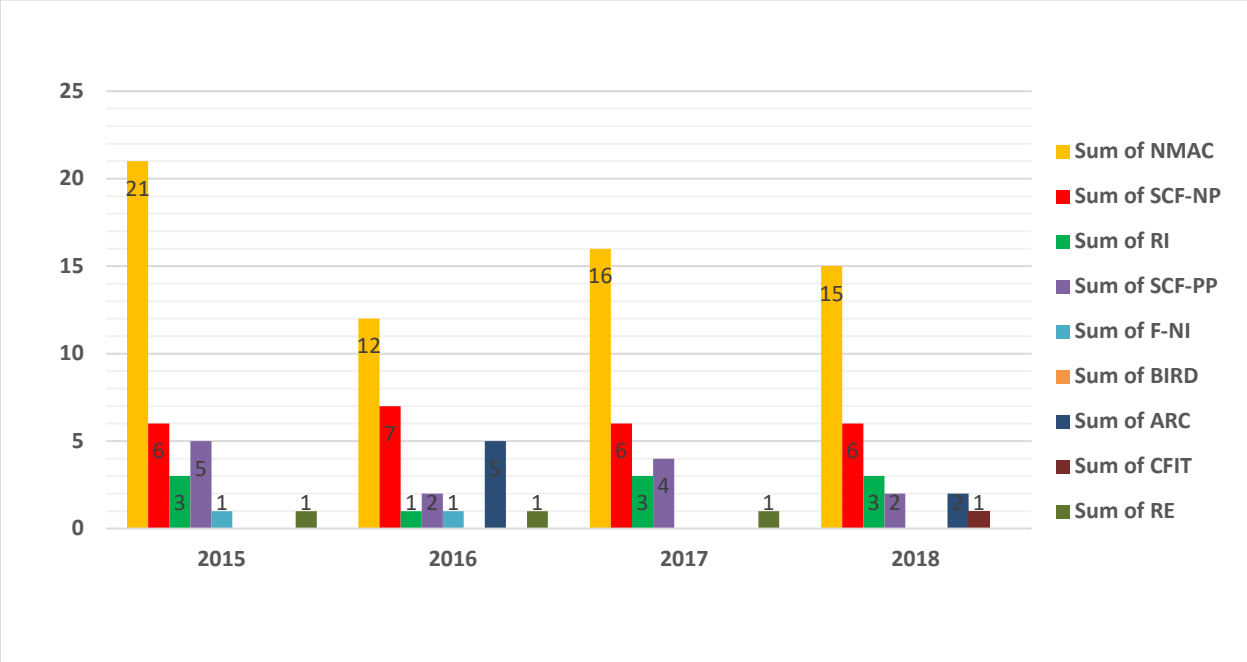
Graph 19: Serious Incidents Distribution as Percentage per Occurrence Category (2014-2018)

Taking a more in-depth look at the serious incidents for the MID Region (State of registry and State of operator) for the period 2014-2018, the following is to be highlighted:

a) In terms of frequency, the most frequent serious incidents categories in the MID Region are:

1. Runway Safety (RS) – (RE, ARC, GCOL, RAMP, CTOL, BIRD, RI);
2. System Component Failure (SCF)- (SCF-PP and SCF-NP);
3. Fire/smoke- (FN-I);
4. Medical (MED);
5. Near Mid Air Collision (NMAC);
6. Turbulence (TURB);
7. Fuel; and
8. ICE.

Total number of serious incidents provided by the MID States for the period 2015-2018.
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.



Graph 20: Number of Serious Incidents Distribution Per Year (2015-2018)

Taking a more in-depth look at the serious incidents reported by the MID Region for the period 2015-2018, the following is to be highlighted:

b) 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 (SCF)- (SCF-NP); and
3. Runway incursion- (RI)

4.2.3 ICAO In-depth Analysis of Accidents

A. Runway Excursions and Abnormal Runway Contact: During 2014-2018, 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.

Root Cause Analysis

1.4 Latent Conditions:

i. Ineffective safety management system
ii. Incomplete/inefficient operator SOP
iii. Deficient flight crew training
iv. Regulatory oversight

2.4 Threat:

i. Decision to make a landing on short runway with tailwind.
ii. Poor judgment and continued landing after an un-stabilized approach
iii. Improper calculating of landing speed without focusing on the tailwind component
iv. Technical failures Pilot information
v. Ineffective reporting of runway surface condition/Contaminated runways
vi. Airport facilities including poor runway paintings/markings/signage lighting
vii. Meteorology

3.4 Errors:

i. Timely crew decisions (very low-level go-arounds)
ii. Failed to go around after un-stabilized approach
iii. SOP Manual not updated and maximum tailwind not mentioned
iv. Manual handling/flight controls
v. Contaminated runways

4.4 Contributing factors:

i. Anti-skid failures of landing gear causing prolong landing distance.
ii. Instantaneous variable wind condition on aerodrome traffic pattern.
iii. Late activation of airbrakes and spoilers (especially airbrakes) with tailwind cause to increase the landing roll distance.

Some of the Precursors, which could Lead to Runway Excursion

1. Precursors for aircraft overrunning the end of the runway on landing (landing overrun)
   Precursors could include: Long landing / high across threshold / extended flare / floating, incorrect performance calculation, ineffective use of stopping devices / time to apply reverse thrust or braking / inappropriate use of auto brake setting, weather related / runway condition / aquaplaning, unsterilized approach, tailwind landing.

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

B. SCF-PP: Engine Failure or malfunction of an aircraft system or component. The engine failure/malfunction contributed to the accidents and serious incidents and counted for 16% of fatalities. The majority of SCF-PP accidents and serious incidents between 2014 and 2018 occurred mainly during take-off and en-route phase of flight, with one fatal accident involving turboprop aircraft.

Root Cause Analysis

1. Latent Conditions:
   i. Regulatory oversight
   ii. Deficient maintenance standard operating procedures
   iii. Ineffective safety management system
   iv. Insufficient resource availability
   v. Deficiencies in the evaluation to monitor changes

2. Threats:

i. Improper Airworthiness Directive implementation and Control
ii. Poor maintenance and errors related to aircraft dispatch or release
iii. Lack of information sharing and support from the State of manufacturer
iv. Embargo on aircraft equipment/Spare parts acquisition
v. Incorrect or incomplete aircraft performance limitations verification
vi. Errors related to the Aircraft Flight Maintenance adherence
vii. Extensive/uncontained engine failure
viii. Incorrect/Unclear aircraft maintenance manual

3. Errors:

i. Crew inadequate aircraft handling
ii. Crew SOP Adherence / SOP Cross-verification
iii. Improper weight and balance calculations

4. Contributory Factors

i. CAMOs' and AMO organization's responsibilities and communication issue
ii. Non-compliance with the regulator operational requirements
iii. Ineffective monitoring in operators line maintenance
iv. Inadequate monitoring in operations, training and technical divisions

C. Loss of Control-Inflight: During 2014-2018 Aircraft upset or loss of control only contributed to one accidents but counted for around 55% of fatalities. During the years 2016 and 2018, the LOC-I occurred during go around (GOA) and en-route phases of flight.

Root Cause Types

The below root-cause analysis is based mainly on industry's analysis of the LOC-I accidents:

1. Latent Conditions:

i. Inadequate safety management system including the use of the FDM data
ii. Regulatory oversight
iii. Incomplete/Inefficient Flight operations

2. Threats:

i. Inappropriate Flight Crew Automation training
ii. Type-rating related issues on complex and highly automated aircraft
iii. Contained engine/power plant malfunction
iv. Severe turbulence, Thunderstorms, wind shear/Gusty wind
v. Poor visibility/IMC conditions
vi. Spatial disorientation/Somatogravic illusion
vii. Flt Crew misdiagnose the problem leading to the application of an incorrect recovery procedure
viii. Lack of exposure to the required maneuvers during normal line flying operations
ix. Limitations in simulator fidelity could lead to pilots not having the manual flying skills required to recover from some loss of control scenarios.

3. Errors:

i. Inappropriate/Incorrect use of Automation by flight crew
ii. Inadequate flight crew monitoring skills/awareness or communication
iii. Flt Crew mishandling of manual flight path and/or speed control
iv. Abnormal checklist
v. Incorrect recovery technique by flight crew when their aircraft has become fully stalled

4. Contributory Factors:

i. Unnecessary weather penetration
ii. Operation outside aircraft limitations
iii. Unstable approach
iv. Vertical/lateral speed deviation

5. Direct Precursors to a Loss of Control Event:

i. Deviation from flight path
ii. Abnormal airspeed or triggering of stall protections

4.4 MID Region Safety Performance - Safety Indicators-Reactive

		Average 2014-2018		2018	
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**	2.58	2.6	2.3	2.6
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**	0.78	0.45	0.71	0.29
Number of Runway Safety related accidents per million departures	Reduce/Maintain the regional average rate of Runway Safety related accidents to be below the global average rate by **2016**	0.82	1.23	0	1.24
	Reduce/Maintain the Runway Safety related accidents to be less than 1 accident per million departures by **2016**	1.54			
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	0.7	0.13
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	0.01	0	0.02

5. Proactive Safety Information

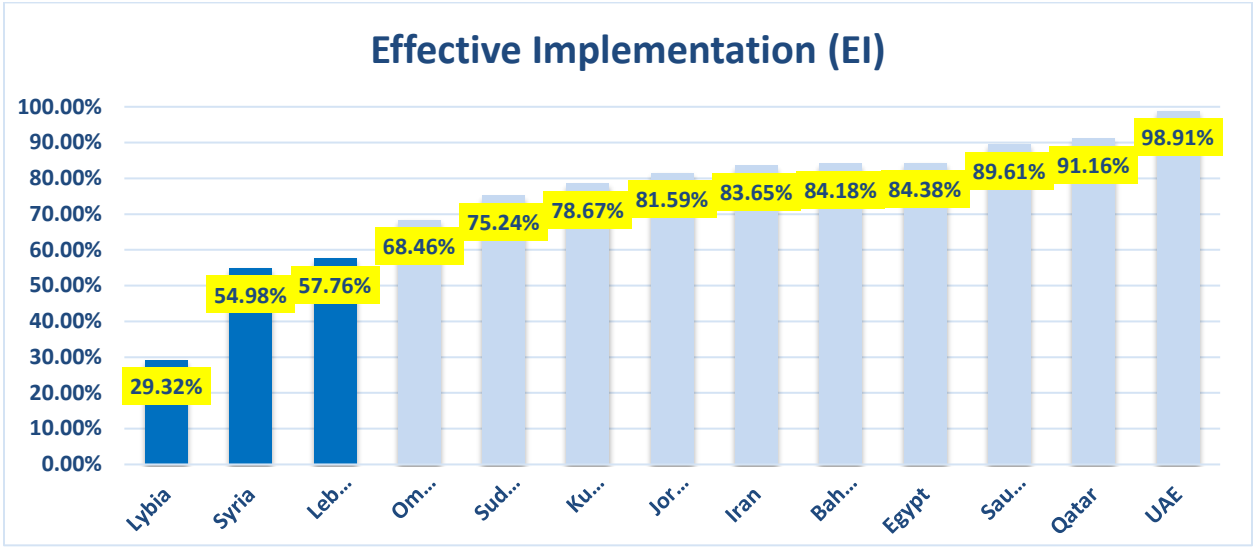
A mature safety management system requires the integration of reactive, proactive and predictive safety data. This section of the Annual Safety Report focuses on proactive safety data analysis to identify additional focus areas that form the basis for the development of SEIs and DIPs for Emerging Risks under RASG-MID.

5.1 ICAO USOAP-CMA

The regional average overall Effective Implementation (EI) in the MID Region (13 out of 15 States have been audited) is 75.23 %, which is above the world average 68.53% (as of 25 Sep 2019). 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.

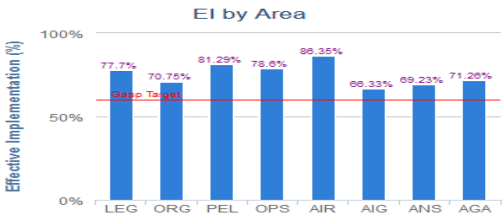
Effective Implementation (EI)



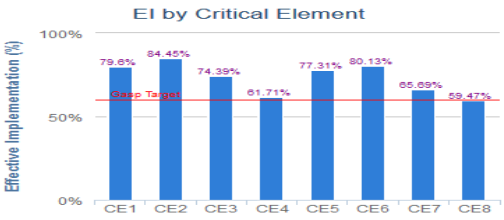
Source: ICAO USOAP CMA On Line Framework (OLF), as of 25 Sep 2019

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% (61.71%) EI, whereas CE8 (resolution of safety issues) is the only one below EI 60% (59. 47%) EI.

EI by Area



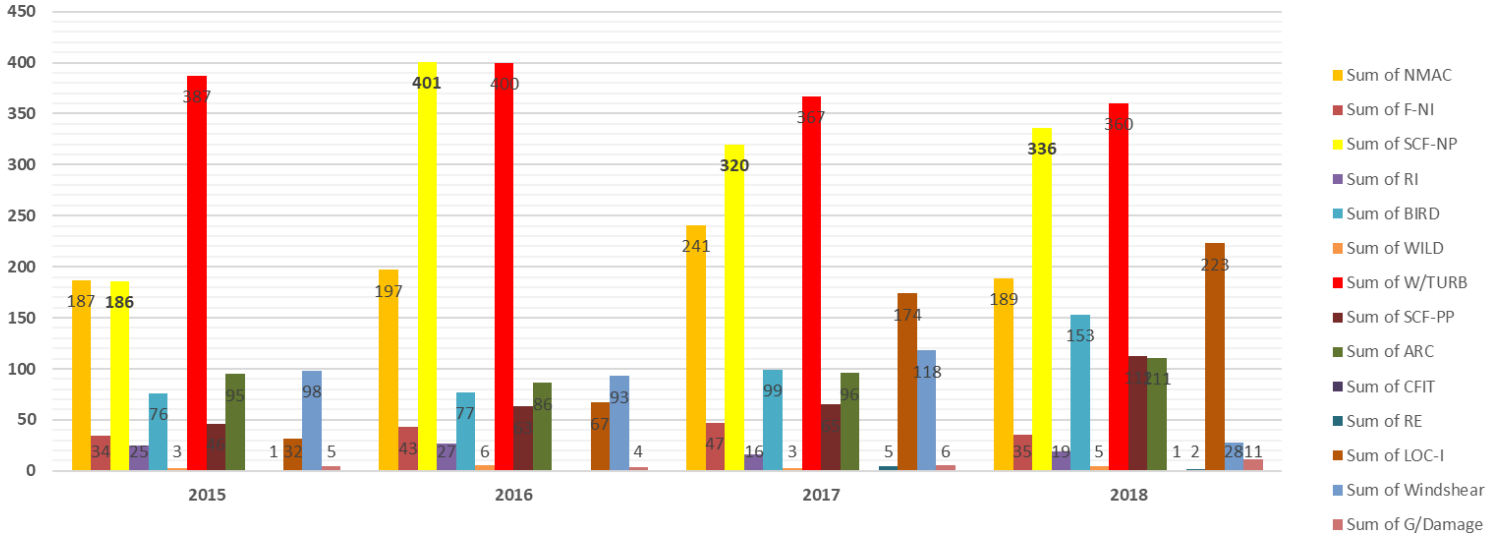
EI by Critical Element



Source: ICAO iSTARS, as of 25 Sep 2019

Incident data provided by the MID States for the period (2015-2018)

The graph 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 midair collision). For an in-depth analysis and to identify the underlying safety issues, MID States should provide further data analysis in order to come out with strategic initiatives and mitigations. In addition, the year of 2018 showed an increase in incidents reporting.

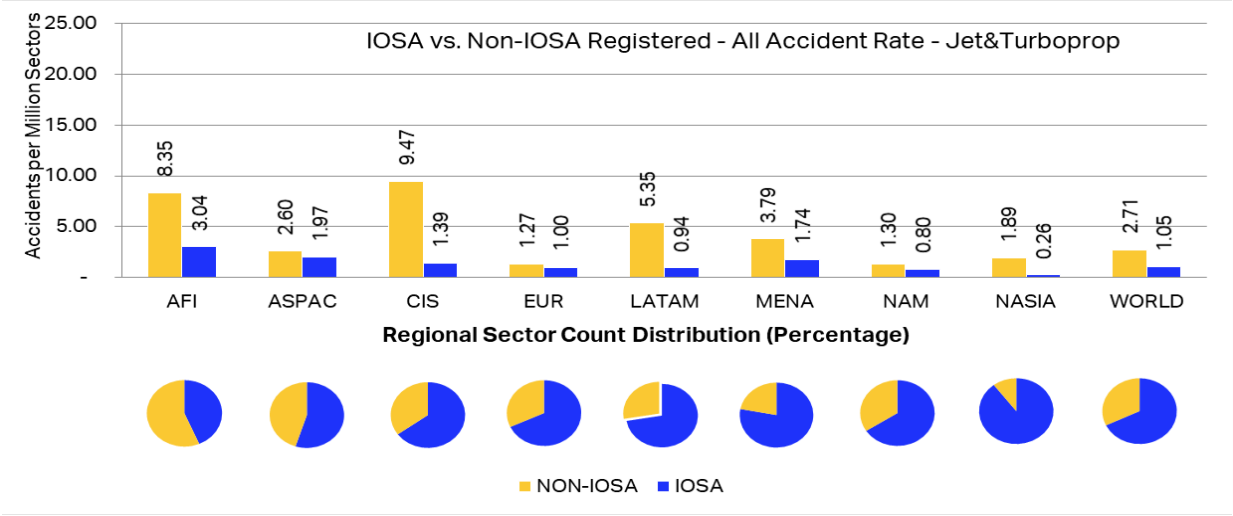


Graph 21: Total number of incidents provided by the MID States for the period 2015-2018

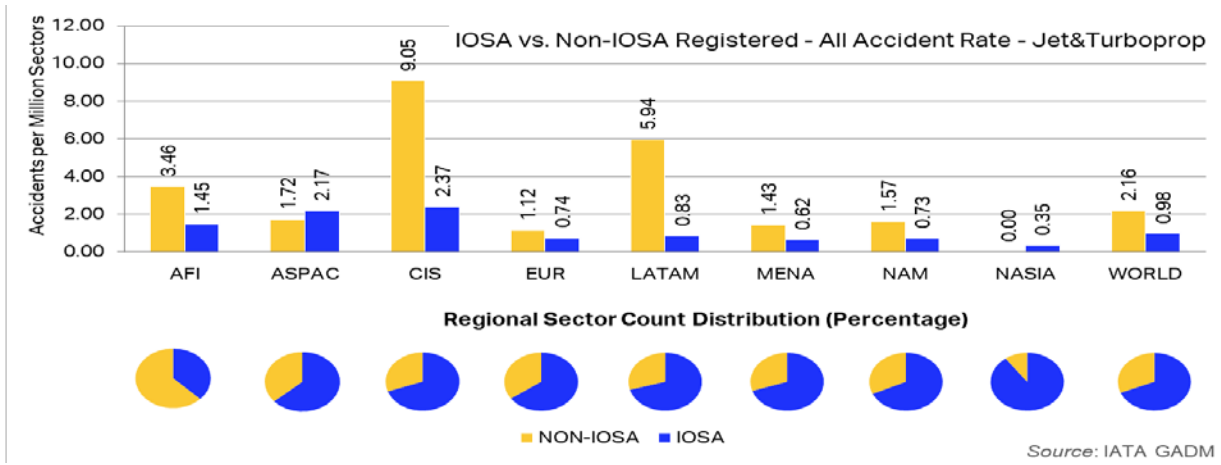
5.2 IATA Operational Safety Audit (IOSA)

There are currently 430 airlines on the IOSA Registry of which 142 are non-IATA Members. 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 2014 - 2018, was above MENA IOSA registered airlines average by an average of 3.79.

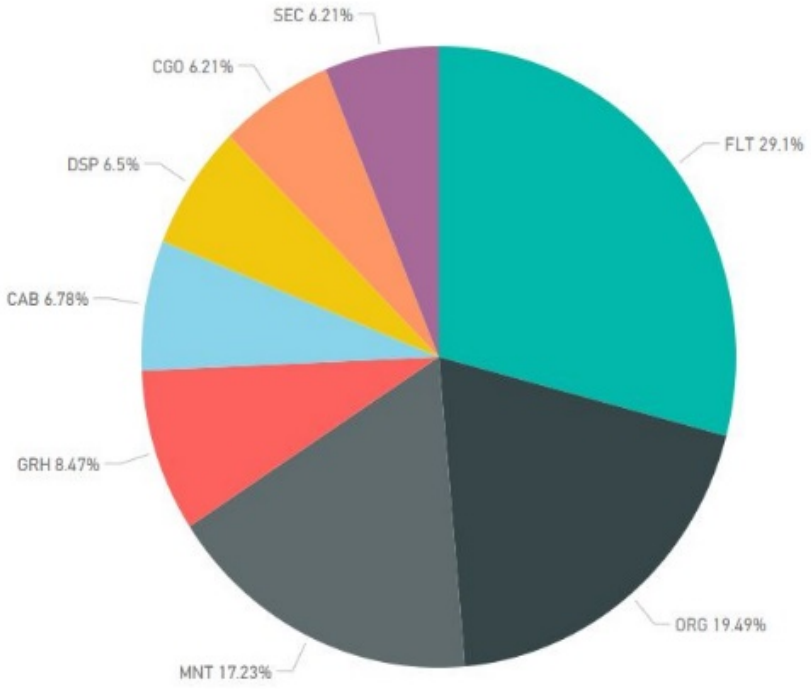


The accident rate for IOSA carriers in 2018 was more than 2 times lower than the rate for non-IOSA carriers.



The IOSA audit results analysis captured under this section cover the period January-December 2018. A summary of the IOSA audit findings is as follows:

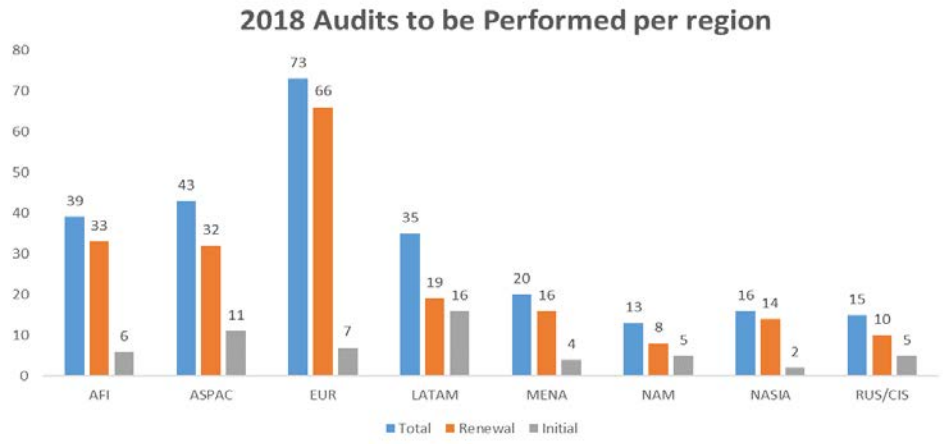
1. 23 audits were performed in the MENA Region with an average of 12.5 findings per audit.
2. Findings were mainly in the areas of Maintenance (MNT), Flight Operations (FLT), Organization Management (ORG), Ground Handling Operations (GRH), and Cabin Safety (CAB). Below chart demonstrates the percentage of findings per area:



5.3 IATA Safety Audit for Ground Operations (ISAGO)

The ISAGO new operational audit model has been developed in consultation with stakeholders. The program is managed and administered by IATA. The ISAGO new operational audit model implemented in January 2018 have made a significant difference. Ground service providers are experiencing audits that get to the detail of their management and operational processes.

The total audits performed in 2018 are **254** of which **20** performed in MENA, 20 with an average of 19 findings raised per audit

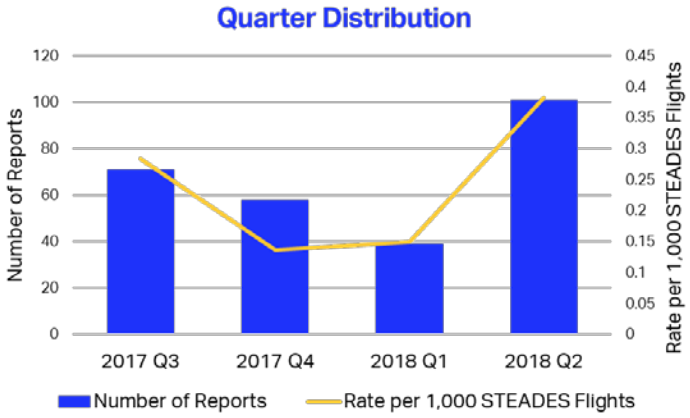


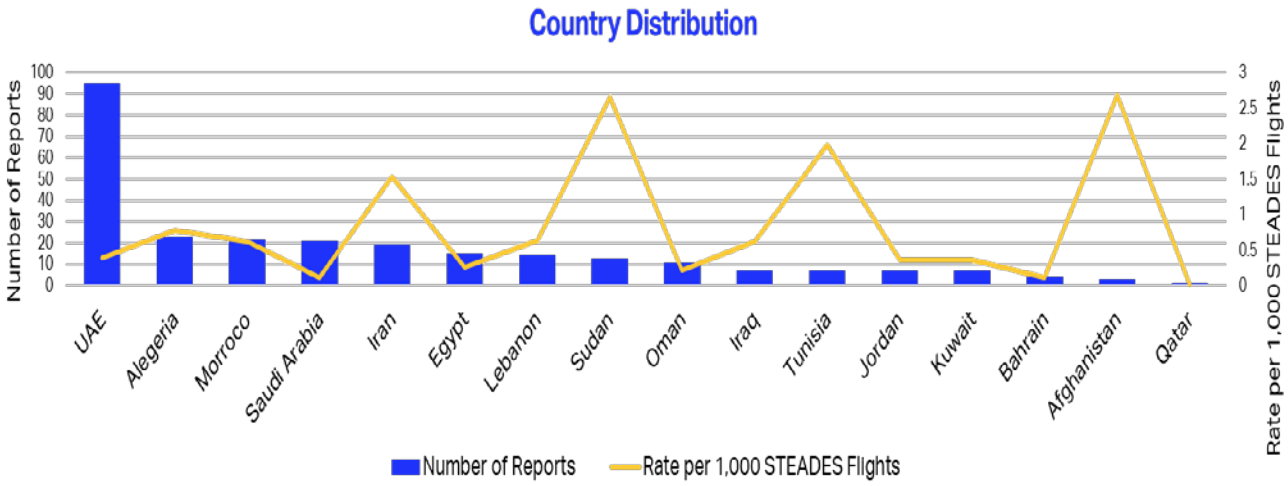
5.4 Incidents Reported by Airlines - STEADES Data

Bird strikes Analysis

The analysis is conducted on Air Safety Reports (ASR) and Cabin Safety Reports (CSR) held in IATA's Safety Trend Evaluation, Analysis & Data Exchange System (STEADES) database. The STEADES database is comprised of de-identified safety incident reports from over 210 participating airlines throughout the world, with an annual reporting rate now exceeding 200,000 reports/year. The STEADES database incorporates a number of quality control processes that assure analysis results.

The data query resulted in **269 reports**. This equals to 0.2245 reports per 1,000 STEADES flights.





95 bird strike events (35%) were reported in United Arab Emirates (UAE), but the rate per 1,000 STEADES flights did not show significance compared to other countries.

85% (210) of bird strikes occurred during Aircraft Approach, Take-off and Landing.

Engine Damage occurred only in 1% (3) of the bird strike reports. One bird strike with engine damage resulted in the aircraft AOG.

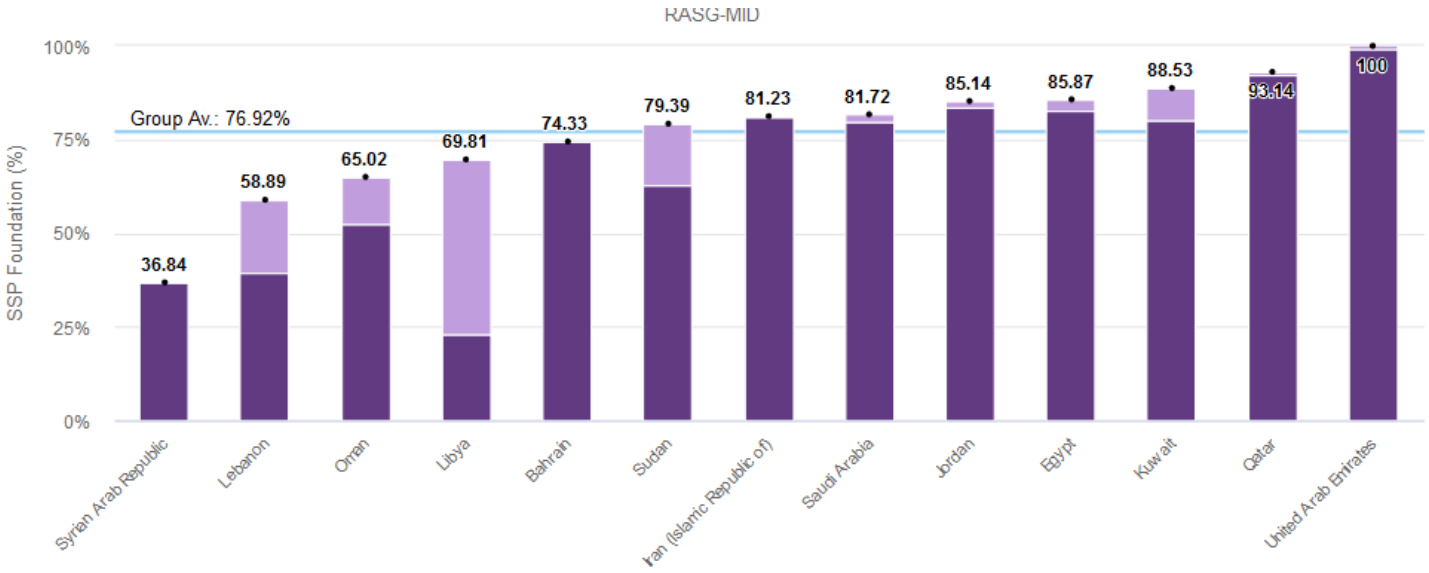
5.5 Region Safety Performance - Safety Indicators-Proactive

Safety Indicator	Safety Target	MID	Remark
Regional average EI	Increase the regional average EI to be above 70% by **2020**	75.23	Target Achieved
Number of MID States with an overall EI over 60%.	11 MID States to have at least 60% EI by **2020**	10 States	
Number of MID States with an EI score less than 60% for more than 2 areas (LEG, ORG, PEL, OPS, AIR, AIG, ANS and AGA).	Max 3 MID States with an EI score less than 60% for more than 2 areas by 2017	7 States	
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
Use of the IATA Operational Safety Audit (IOSA), to complement safety oversight activities.	a. Maintain at least 60% of eligible MID airlines to be certified IATA-IOSA at all times. b. All MID States with an EI of at least 60% use the IATA Operational Safety Audit (IOSA) to complement their safety oversight activities, by 2018.	57% (As of Sep 2017) 4 out of 10 States (40%)	
Number of certified international aerodrome as a percentage of all international aerodromes in the MID Region.	a. 50% of the international aerodromes certified by 2015. b. 75% of the international aerodromes certified by 2017.	67%	
Number of established Runway Safety Team (RST) at MID International Aerodromes.	50% of the International Aerodromes by 2020.	57%	Target achieved

6. Predictive Safety Information

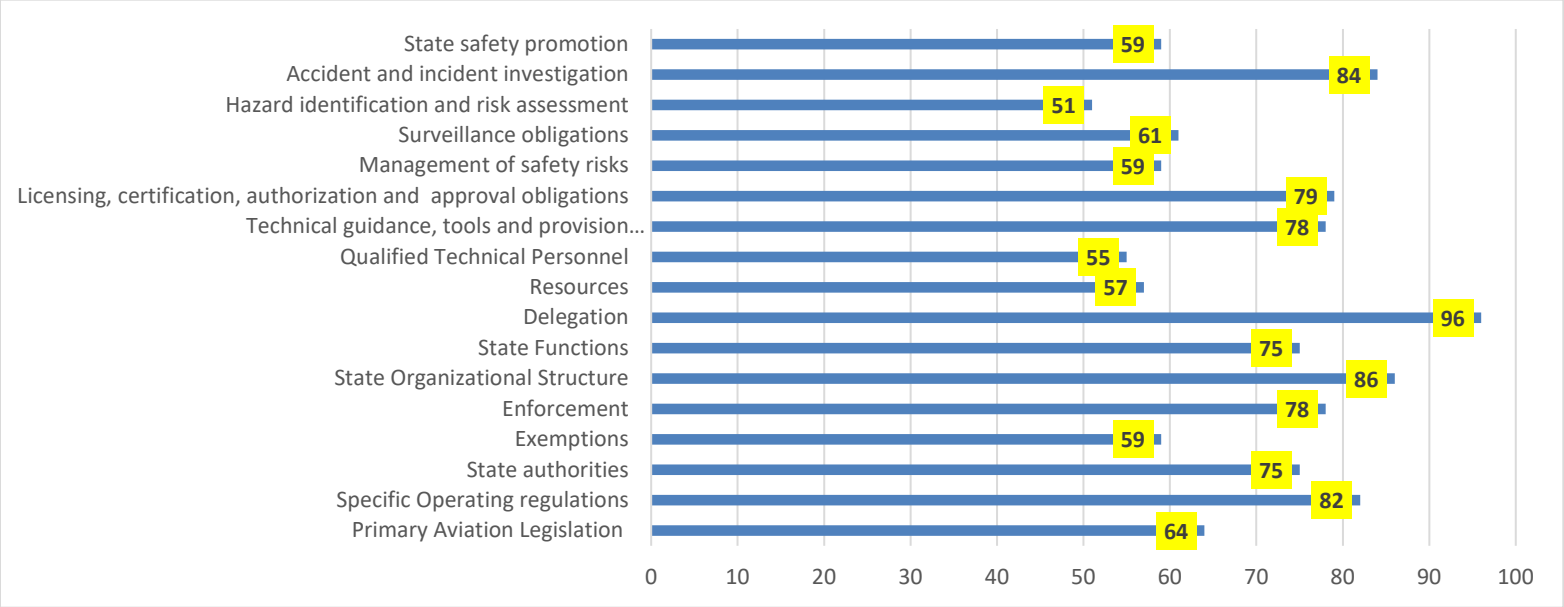
6.1 MID Region State Safety Programme (SSP) Foundation

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, 92%. The SSP foundation EI for MID Region States is shown in the graph below.



Graph 21: Overall SSP foundation for MID Region States (Source: iSTARS as of 25 Sep 2019)

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%.

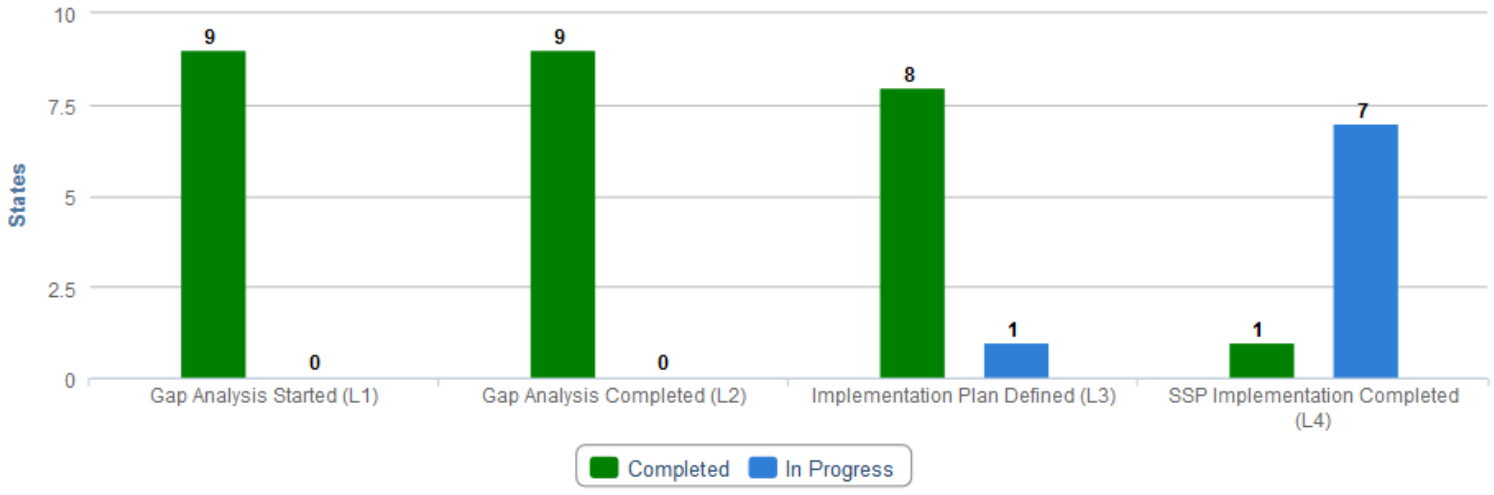


Graph 22: Average EI by Safety Management subjects for States in MID Region (Source: iSTARS as of 30 Oct 2019)

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 23: SSP Implementation Progress for States in MID Region, Limited to States with EI>=60%- States number: 9 (Source: iSTARS as of 26 Sep 2019)

6.2 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.

6.3 IATA Safety Data

IATA's main database for collecting predictive safety information is Flight Data Exchange (FDX). It is an aggregated de-identified database of FDA/FOQA type events that allows the user to proactively identify safety hazards.

Due to the low levels of participation by the MID Region carriers in FDx program, no useful information could be extracted.

6.4 MID Region Safety Performance – Safety Indicators – Predictive

Safety Indicator	Safety Target	MID
Number of MID States, having completed the SSP gap analysis on iSTARS.	10 MID States by 2015	10 States
Number of MID States that have developed an SSP implementation plan.	10 MID States by 2015	8 States
Number of MID States with EI>60%, having completed implementation of SSP Phase 1.	All MID States with EI>60% to complete phase 1 by **2016**.	3 States (4 States-partially)
Number of MID States with EI>60%, having completed implementation of SSP Phase 2.	All MID States with EI>60% to complete phase 2 by the end of **2017**.	1 State (6 States-partially)
Number of MID States with EI>60%, having completed implementation of SSP Phase 3.	All MID States with **EI>60%** to complete phase 3 by the end of **2018**.	(7 States-partially)
Number of MID States with EI>60%, having completed implementation of SSP.	All MID States with EI>60% to complete SSP implementation by **2020**	None
Number of MID States with EI>60% that have established a process for acceptance of individual service providers' SMS.	a. 30% of MID States with EI>60% by 2015. b. 70% of MID States with EI>60% by 2016. c. 100% of MID States with EI>60% by 2017.	75%

7. Overall Analysis

7.1 Identification of Focus Areas for MID Region

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 main risk areas for the MID Region as follow:

		Potential Accident Outcome						
Safety Issues	**Accident Severity**	**CFIT**	**LOC-I**	**MAC**	**GCOL**	**RE/ARC**	**Injury or Damage inflight**	**Injury or Damage on Ground**
Technical Problems with Landing Gear Collapse/not Extended during landing	Major					x		x
Contained engine Failure/Power Plant Malfunctions	Catastrophic	x	x				x	
Flight Planning and Preparation	Catastrophic	x	x			x		
Fire/Smoke-non impact	Catastrophic		x				x	x
Un-stable or non-complaint Approach	Catastrophic	x	x			x		x
Convective weather (Turbulence, Hail, Lightning)								
Deviation from pitch or roll attitude	Catastrophic	x	x			x		
Security Risks with impact on safety	Catastrophic		x					
Monitoring of flight parameters and automation modes	Catastrophic		x					
Tail/Cross wind/Winds hear	Catastrophic		x			x		x
Loss of separation in flight/ and or airspace/TCAS RA infringement	Catastrophic		x	x			x	
Runway Incursion	Catastrophic				x	x		x
Maintenance events and technical failures	Catastrophic	x	x			x	x	x
Contaminated runway/Poor braking action	Major					x		x
Birdstrike/Engine Bird ingestion	Catastrophic		x			x	x	x
Wake Vortex	Catastrophic			x			x	
Handling and execution of Go-arounds	Catastrophic		x			x	x	

The table shows that each identified safety issue is linked to the potential accident outcome (s).

First, Considering ICAO reactive safety information, the focus areas 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) and Mid Air Collision (MAC) as detailed in the above table of feared consequences" of the risk portfolio of DGAC France. Therefore, the CFIT and MAC were also considered as focus areas due to the potential risk of these type of accidents though the MID States did not experience those accidents during the period 2014-2018.
Based on the analyses of reactive and proactive safety information, it is concluded that the Focus Areas 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); and
4. Mid-Air Collision (MAC)

Further information about the potential accident outcomes regarding the focus areas is provided below:

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 2014-2018 aircraft, upset or loss of control contributed three accidents. It includes uncontrolled collisions with terrain following engines failures after take-off, but also occurrences where the aircraft deviated from the intended flight path or aircraft flight parameters, regardless of whether the flight crew realized the deviation and whether it was possible to recover or not.

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 2014-2018, 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-centred or hard, or where the aircraft had technical problems with the landing gear (not locked, not extended or collapsed) during landing.

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 aero-plane 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 a main priority in this key risk area. However, additional data is needed for further analysis in order to identify the underlying safety issues.

Controlled Flight In to 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 in order to identify the underlying safety issues.

7.2 Identification of emerging risks for MID Region

Emerging risks have been identified, as follows:
Regarding the emerging risks mainly identified from ICAO, IATA data, serious incidents and the incidents data provided by the States except the risk of security related which was included under the accident data of the State of occurrence.

1. Security Risks with impact on safety-SEC;
2. Fire/smoke- (non-impact)- (FN-I);
3. Runway incursion (RI);
4. Birdstrike-(BIRD); and
5. Wake Vortex.

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 in order to identify the root causes and associated safety issues.

Fire/Smoke- (non-impact) (FN-I)
Uncontrolled fire on board an aircraft, especially when in flight, represents one of the most severe hazards in aviation. In-flight fire can ultimately lead to loss of control-inflight, either because of structural or control system failure, or again because of crew incapacitation. Fire on the ground can take hold rapidly and lead to significant casualties if evacuation and emergency response are not swift enough. Smoke or fumes, whether they are associated with fire or not, can lead to passenger and crew incapacitation and will certainly raise concern and invite a response. Even when they do not give rise to a safety impact, they can give rise to concerns and need to be addressed. While there were no fatal accidents involving MID States operators in the last years involving fires, there have been incidents reported by MID States, which make it an area of concern.

Security related (SEC)
The impact of security in safety is a real concern and should be considered as a strategic priority. In addition, it should be shared with MID shared with MID States and ICAO MID Office (AVSEC) for further data collection and analysis and come out with strategic initiatives.

Birdstrike (BIRD)
Their accident outcomes could lead to runway collisions or Loss of control-inflight or runway excursions. While there were no fatal accidents involving MID States air operators in the last years involving birdstrike, there have been huge number of birdstrike occurrences reported by MID States and analysis provided by IATA that make it an area of concern. Thus, MID States should provide further data analysis in order to identify the root causes and associated safety issues.

Wake Vortex

Their accident outcomes could lead to Loss of control-inflight. While there were no fatal accidents involving MID States air operators in the last years involving wake turbulence. However, there have been number of wake vortex occurrences reported by MID States which make it an area of concern. Therefore, further attention should be given this safety issue.

8. Final Conclusions

Following the analysis of the reactive and proactive safety information provided by ICAO, IATA, and MID Region States for the period 2014 - 2018, it was concluded that the main Focus Areas for the MID Region are:

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

The following are identified as Emerging Risks in the MID Region besides the old ones:

1. Security risks with impact on safety- SEC;
2. Fire/Smoke (non-impact)- F-NI;
3. Runway Incursion (RI);
4. Birdstrike- (BIRD); and
5. Wake vortex.

The regional average overall Effective Implementation (EI) in the MID Region (13 out of 15 States have been audited) is 75.23 %, which is above the world average 68.53% (as of 25 Sep 2019). Three (3) States are currently below EI 60%.

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% (61.71%) EI, whereas CE8 (resolution of safety issues) is the only one below EI 60% (59. 47%).

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 related to SSP implementation include identification of a designated entity, establishment of an initial Acceptable Level of Safety Performance (ALoSP), allocation of resources to enable SSP implementation and lack of qualified and competent technical personnel.

It should be highlighted that reporting of incidents is still low in the MID Region (Confidentiality concerns). Moreover, mechanisms for gathering and processing predictive safety information at regional level should be established in order to collect and analyse safety data to proactively identify safety concerns before accidents and/or incidents occur, to develop timely mitigation and prevention measures.

It is to be highlighted that the RASG-MID/7 meeting held in Cairo during 15-18 April 2019 endorsed the revised version of the MID Region Safety Strategy. Therefore, in the next MID Annual Safety Report Edition the revised safety indicators and targets will be included.

Appendix A: List of Acronyms

ARC	Abnormal Runway Contact
ADRM	Aerodrome
ANSP	Air Navigation Service Provider
ATC	Air Traffic Control
ATS	Air Traffic Services
ASRT	Annual Safety Report Team
BIRD	Birdstrike
CTOL	Collisions with Obstacles during Take Off or Landing
CFIT	Controlled flight into terrain
DIP	Detailed Implementation Plan
EVAC	Evacuation
F-IN	Fire/Smoke (Non-Impact)
FDA	Flight Data Analysis
FOQA	Flight Operations Quality Assurance
FUEL	Fuel Related
GCOL	Ground Collision
RAMP	Ground Handling
GASP	ICAO Global Aviation Safety Plan
ICE	Icing
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
LOC-G	Loss of Control - Ground
LOC-I	Loss of control - inflight
LALT	Low Altitude Operations
MAC	Mid Air Collision
MED	Medical
MTOW	Maximum Take-off Weight
MENA	Middle East & North Africa (IATA Region)
MID	Middle East Region (ICAO Region)
NAV	Navigation Errors
OTHR	Other
RAST	Regional Aviation Safety Group
RE	Runway Excursion (departure or landing)
RI	Runway Incursion
RS	Runway Safety
SEC	Security Related
SEI	Safety Enhancement Initiative
SMS	Safety Management System

SOP	Standard Operating Procedure
SSP	State Safety Programme
SCF-NP	System Component Failure-Non-Power Plant
SCF-PP	System Component Failure-Power Plant
TURB	Turbulence Encounter
USOS	Undershoot/Overshoot
UNK	Unknown or Undetermined
UAS	Undesirable Aircraft State
USOAP	Universal Safety Oversight Audit Program
WILD	Wildlife
WSTRW	Wind shear or Thunderstorm

CREDITS

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-END-

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APPENDIX B

LIST OF FOCUS AREAS AND EMERGING RISKS TAXONOMY

Scope: State of Occurrence

The data to be collected be based on scheduled commercial operations involving aircraft having a Maximum Take-off Weight (MTOW) above 5700 kg.

Occurrence Category	ADREP/CICTT taxonomy	Remarks
Runway Excursion (RE)	Veer off or overrun off the runway surface.	
Abnormal Runway Contact (ARC)	Any landing or take-off involving abnormal runway or landing surface contact.	
Loss of Control-Inflight (LOC-I)	Loss of Control while, or deviation from intended flight path, in flight.	Including occurrences which lead to the LOC-I accident
Controlled Flight Into Terrain (CFIT)	Inflight collision or near collision with terrain, water, or obstacles without indication of loss of control.	Including occurrences which lead to the CFIT accident
MID Air Collision (MAC)/ NMACs	Airprox/TCAS Alerts, Loss of separation as well as NMAC or collisions between aircraft inflight.	(including, RPAS/Drones, Call Sign Confusion)
Fire/Smoke (F-NI)	Fire or smoke in or on the aircraft, in flight, or on the ground, which is not the result of impact.	
Runway Incursion (RI)	Any occurrence at aerodrome involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for landing and takeoff of aircraft.	
System Component Failure –Non-Power Plant (SCF-NP)	Failure or malfunction of an aircraft system or component other than the power plant.	
Turbulence Encounter (TURB)	In-flight turbulence encounter.	Mainly occurrences related to wake turbulence (Vortex)

Birdstrike (BIRD)	Occurrences involving collisions/near collisions with bird(s).	
System Component Failure- Power Plant (SCF-PP)	Failure or malfunction of an aircraft system or components related to the power plant.	
Security related (SEC)	Criminal/Security acts which result in accidents or incidents (per Annex 13 to the Convention on International Civil Aviation).	
Wind shear	Flight into wind shear or thunderstorm	

NB: States may share any other national safety concern.

APPENDIX C

TEMPLATE FOR THE COLLECTION OF

ACCIDENT, SERIOUS INCIDENT AND INCIDENT DATA AND SAFETY ANALYSIS

Name of State: ……..

Traffic: Nb. of Departures per year [2015: ……] [2016: ……] [2017: ……] 2018: ……]2019: ……]

1- Occurrences: *The data to be collected be based on scheduled commercial operations involving aircraft having a Maximum Take-off Weight (MTOW) above 5700 kg.*

#	Occurrence Category	2015			2016			2017			2018			2019		
		# Accidents	# Serious incidents	# Incidents	# Accidents	# Serious incidents	# Incidents	# Accidents	# Serious incidents	# Incidents	# Accidents	# Serious incidents	# Incidents	# Accidents	# Serious incidents	# Incidents
1	Runway Excursion (RE)															
2	Abnormal Runway Contact (ARC)															
3	Loss of Control-Inflight (LOC-I)															
4	Controlled Flight Into Terrain (CFIT)															
5	Mid Air collision (MAC)/ NMAC															
6	Fire/Smoke (F-NI)															
7	Runway Incursion-(RI)															
8	System Component Failure-Non-Power Plant (SCF-NP)															

9	Wake Turbulence															
10	Bird Strike															
11	Security related (SEC)															
12	System Component Failure-Power Plant (SCF-PP)															
13	Wind shear															

States should provide the number of accident, serious incidents, and incidents related to each category mentioned in the template above for the past three years (2015-2018)

Scope: State of Occurrence

2- Safety data Analysis (root-cause analysis, trends, etc.)

3- Main safety risks

4- Safety Recommendations

- END -