ICAO

SAFETY

MID Region Annual Safety Report

Tenth Edition 2021

Reference Period (2016 - 2020)

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Contents

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 Implementation Group (SEIG), the 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

Each year brings us new challenges. During the year 2020, the COVID-19 pandemic has challenged every aspect of life and industry on earth. The economic and human cost of this tragedy is yet to be fully understood. Normally, the aviation system provides a means to connect with those important to us at critical times in their lives. While this function has been significantly interrupted, and many other barriers stop us from meeting up with family and friends, aviation has remained a vital method of ensuring that essential medical expertise and supplies are able to be shipped to where they are most needed in the world, often using modified passenger aircraft that have been specially certified for cargo operations. In addition, the COVID-19 pandemic has had an unprecedented effect on the ICAO MID office planned work programme activities due to the pandemic restrictive measures which forced the ICAO MID office to postpone some of its activities. However, resources were redirected to focus on virtual activities to provide support to the States.

Over the last five years, the global scheduled commercial international operations accounted for approximately 22.47 million departures in 2020, compared to 34.9 million departures in 2016. The MID Region shows a high decrease in traffic volumes during 2020. Total scheduled commercial departures in 2020 accounted for approximately 694,941 estimated departures compared to 1.3 million departures in 2016. In terms of an aircraft accident, the MID Region had an accident rate of 5.76 accidents per million departures in 2020, which increased compared to the previous year (2019). The 5-year average accident rate for 2016-2020 is 2.67, which is above the global average rate (2.44) for the same period. The MID Region accident rate in 2020 is higher than the global accident rate, which is 2.14 accidents per million departures.

The 5-year average fatal accident rate for 2016-2020 is 0.73, which is above the global average rate (0.43) for the same period. The MID Region had no fatal accidents in 2017 and 2019. However, four fatal accidents occurred in 2016, 2018, and 2020. The 2016 accident caused 67 fatalities, 66 were registered in 2018, and the year 2020 caused 176 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) detailed in the MID Region Aviation Safety Plan (MID-RASP 2020-2022 Edition).

Furthermore, the MID-RASP 2020-2022 Edition considers and supports the objectives and priorities of GASP 2020-2022 Edition. MID-RASP also emphasizes the importance of identifying and mitigating risks at MID region level. In addition, MID-RASP is to create a common focus on regional aviation safety issues as a continuation of the MID region work to improve aviation safety and to comply with ICAO standards and supports MID States and industry in implementing the GASP 2020-2022 Edition.

The Eighth meeting of the Regional Aviation Safety Group – Middle East (RASG-MID/8) was held in Cairo, Egypt, Virtual Meetings, 15-22 February 2021; reviewed and endorsed the MID-RASP 2020-2022 Edition including the SEIs list and their respective actions through RASG-MID CONCLUSION 8/3.

Therefore, to address organizational challenges/issues, regional operational risks, and emerging risks; 17SEIs and 50 safety actions have been included in the MID-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. Mid-Air Collision (MAC);
4. Controlled Flight into Terrain (CFIT); and
5. Runway incursion (RI)

In addition to this, safety issues have been identified and mapped to their respective 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.

1. 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 76 %, which is above the world average 68.68 % (as of 24 May 2021). Three (3) States are currently below EI 60%.

All eight areas have an EI above 60%. However, the areas of AIG and ANS still need more improvement. Regarding the Critical Elements (CEs), CE4 (Qualified technical personnel) improved and is above 60% (62.39%) 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.

2. 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, 1%.

Implementation of SSP is one of the main challenges faced by the 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. 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 implementation of the SSP. The SMIT handbook is being drafted to guide the work of the SMIT team to support States in an effective way.

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/webinars, 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.

3. Human Factors and Competence of Personnel

As new technologies emerge on the market and the complexity of the system continues increasing, it is of key importance to have the right competencies and adapt training methods to cope with new challenges. CRM has been identified as most important human factors issue in the domain of commercial air transport and safety actions would be identified and developed.

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.

1. GNSS Outages/ Vulnerability

A total of 3,373 Aviation Safety Reports which were collected in MID Region from IATA Incident Exchange Database (IDX), were analyzed to capture GNSS/GPS Interference reports from January 2019 to December 2020. The majority of GNSS/GPS interference was reported in Ankara FIR, Baghdad FIR and their respective borders, which sum up to 83.8% of total reports, followed by Nicosia FIR and Beirut FIR.

By analyzing reported waypoints and coordinates, two major clusters were identified:

• Eastern Turkish airspace to Iraq, Iran and Armenia (extended to the border between Armenia and Azerbaijan).

• Eastern Mediterranean airspace to Cyprus, Egypt, Lebanon and Israel (extended to a corridor between Israel and Jordan.

2. 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 virtual Meeting 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 (MID RPTF) which was then endorsed by the Middle East DGCA virtual Meeting held on April 23, 2020.

The MID-RPTF would serve as a platform for coordination and cooperation amongst all stakeholders to support States for the recovery plan of the aviation industry in Middle East during COVID-19 pandemic period and at the same time prepare for the post COVID-19 recovery phase. It will also ensure that there is no duplication of efforts with associated Regional Groups.

The MID RPTF Term Of reference (TORs) has updated and endorsed by the 4th Virtual DGCA meeting. The MID RPTF framework was established to include 4 technical work streams namely: Public Health Requirements, Operational Safety Measures, Avaition security and Facilitation, and Air Navigation Services/Air Traffic Management. Each work stream identifies its key activities and their respective actions and deliverables/outcomes to be presented to the MID TPTF meetings.

The MID RPTF composition includes the Chairpersons of MIDANPIRG, RASG-MID, MID-RASFG and CAPSCA-MID; States representatives; States CRRIC Focal points; Representatives from the Regional and International Organizations (AACO, ACAO, ACI, CANSO, IATA, ICAO, IFALPA, and IFATCA); and

Operators, and/or Service Providers may be invited to participate in the MID RPTF meetings, as required.

The MID-RPTF contributed to the development and would also continue to foster and support the implementation of MID CART implementation plan and associated MID Regional Groups CART implementation plans of actions.

From the onset of the coronavirus disease 2019 (COVID-19) crisis, the aviation system has faced ever-growing challenges. The International Civil Aviation Organization (ICAO), through the Council Aviation Recovery Task Force (CART), has resolved to partner with its Member States, international and regional organizations, and industry to address these challenges and to provide global guidance for a safe, secure and sustainable restart and recovery of the aviation sector. The ICAO CART developed and issued CART I, CART II, and CART III Reports and the associated "Take-Off Guidance Document" (TOGD).

The MID CART Implementation Plan is developed in line with and in support of the Global Implementation Roadmap (GIR) to contribute to the restart and recovery of the civil aviation system by establishing and enabling a framework for an effective implementation of the recommendations and guidance outlined in the CART Report and the associated TOGD.

iPacks are developed and implemented in full alignment with the measures and recommendations contained in the CART Report. Thus, The Aviation Safety Risk Management related to COVID-19 for CAAs and aerdrome Re-start iPack have been deployed to support States in the Region.

In addition, to ensure rapid, accurate and standardized information in support of States' efforts to minimize the spread of COVID-19 by air transport and to protect the health of air travellers and aviation personnel while maintaining essential air transport operations, ICAO established the COVID-19 Safety Operational Measures website (https://www.icao.int/safety/OPS/Pages/default.aspx).

3. Ensure the Safe Operations of UAS (drones)

The number of drones at the global level has increased. Available evidence demonstrates an increase of drones coming into close proximity with manned aviation (both aeroplanes and helicopters) and the need to mitigate the associated risk. The civil aviation authority is responsible for, inter alia, ensuring aviation safety and protecting the public from aviation hazards. However, additional safety data and safety information are needed for further analysis to identify the underlying safety issues.

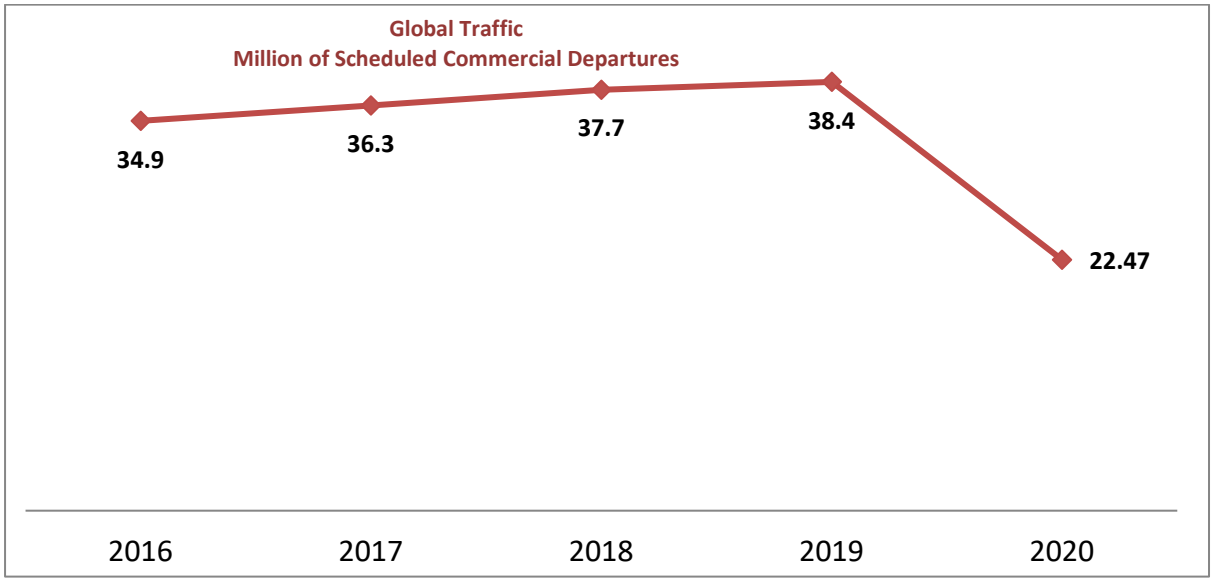
4. Impact of Security on Safety

The crash of flight MH17 immediately raised the question why the aero plane was flying over an area where there was an ongoing armed conflict. Similar event had occurred in the MID region involving the Ukraine International Airlines Flight 752 (PS752) beginning of the year 2020.

1. Traffic Volumes

1.1 Global Traffic

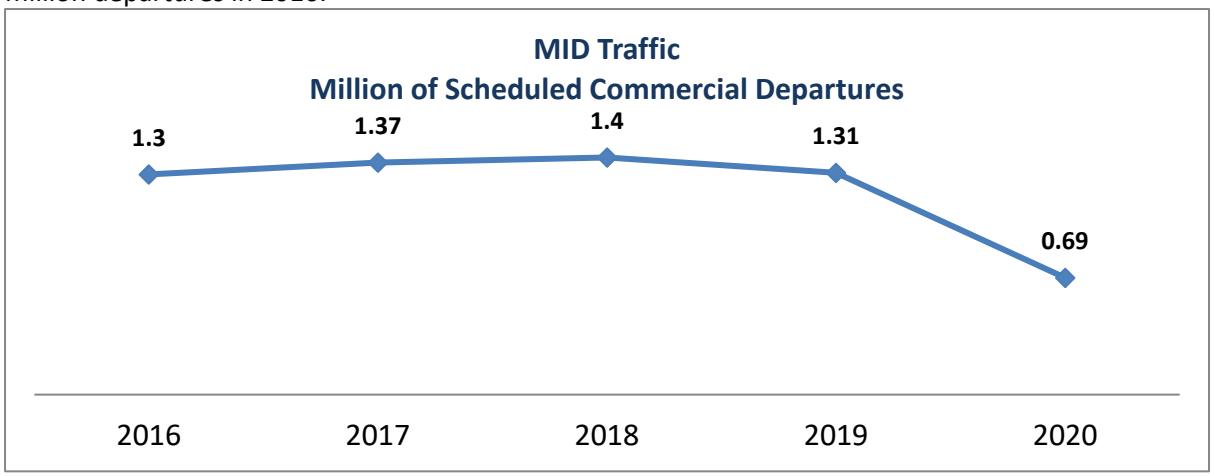
The global scheduled commercial international operations accounted for approximately 22.47 million departures in 2020, compared to 34.9 million departures in 2016; which showed a high decrease.



Graph 1: Global Traffic Volume (Source ICAO Safety Report 2021)

1.2 MID Traffic

The MID Region shows a high decrease in traffic volumes during 2020. Total scheduled commercial departures in 2020 accounted for approximately 694,941 estimated departures compared to 1.3 million departures in 2016.



Graph 2: MID Traffic Growth (Source ICAO Safety Report 2021)

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:

Table 2 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 applications used for the development of the ICAO Safety Reports. In addition, Occurrence Validation Study Group (OVSG) 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 (2016-2020), which is used for monitoring the progress of achieving the Safety Targets in the MID Region Safety Strategy.

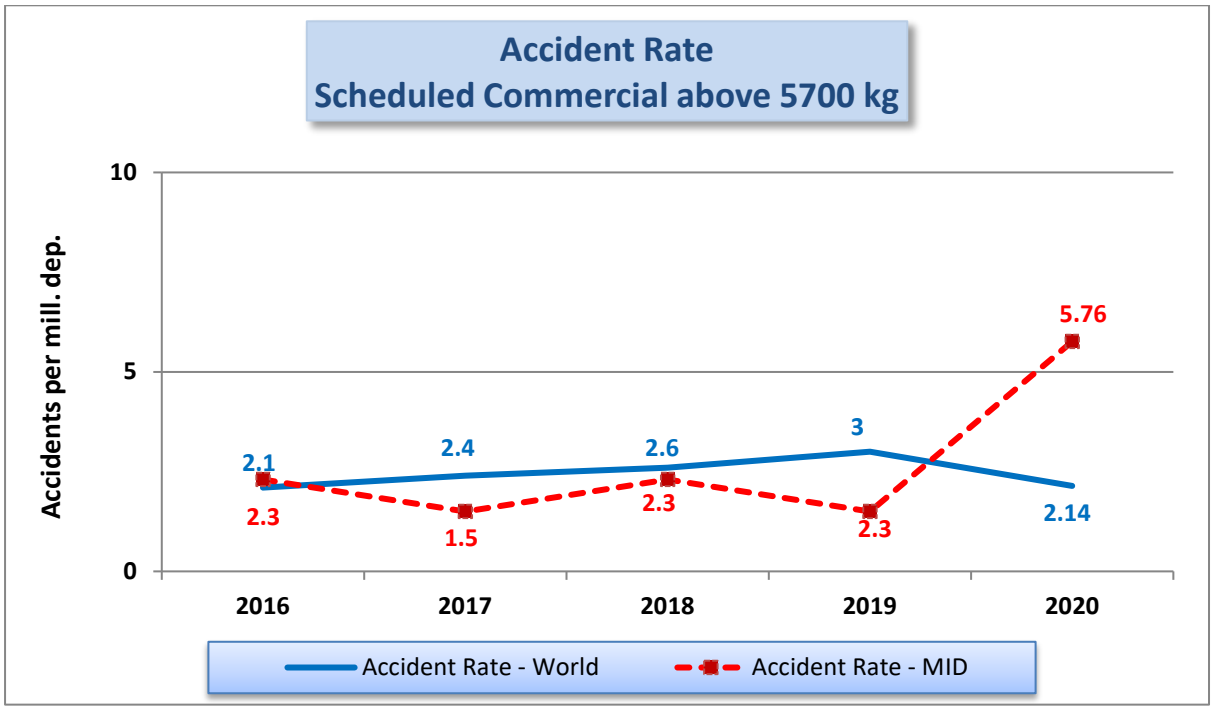
Besides, it provides data analysis regarding accidents aircraft registered in the MID Region (State of Registry) as well as for the MID-air operators (State of the Operator) using the same criteria mentioned above. It is to be highlighted that the State of registry and State of the operator Section focuses mainly

on counts and percent distribution (no rates).

2.2.1 MID State of Occurrence

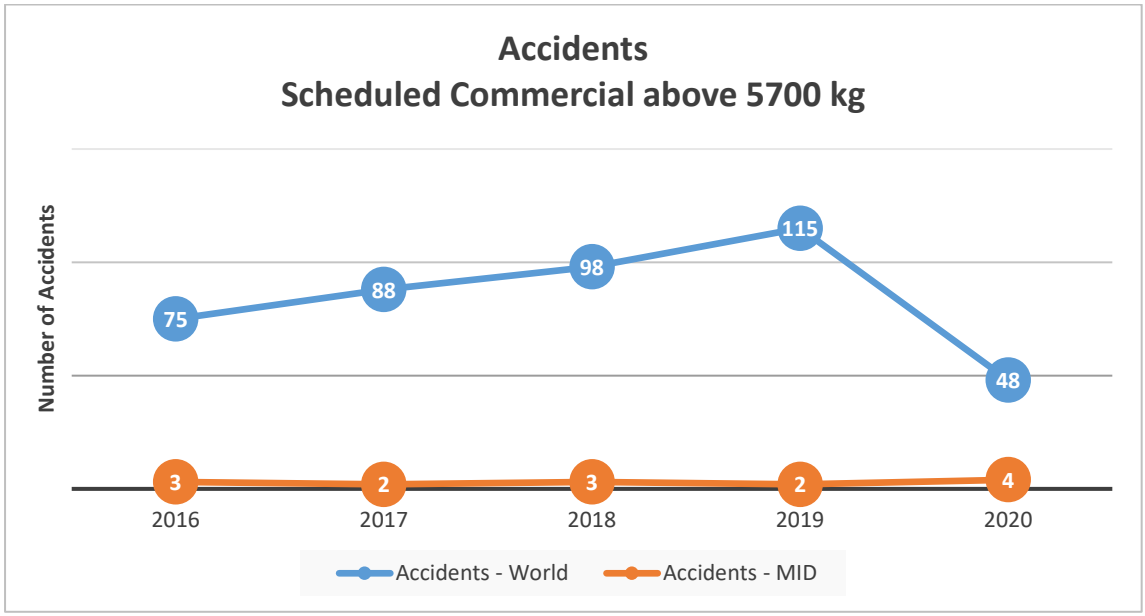
2.2.1.1 Accidents Rates and Fatalities

Graph 3 shows that the MID Region had an accident rate of 5.76 accidents per million departures in 2020, which increased compared to the previous year (2019). The 5-year average accident rate for 2016-2020 is 2.67, which is above the global average rate (2.44) for the same period.



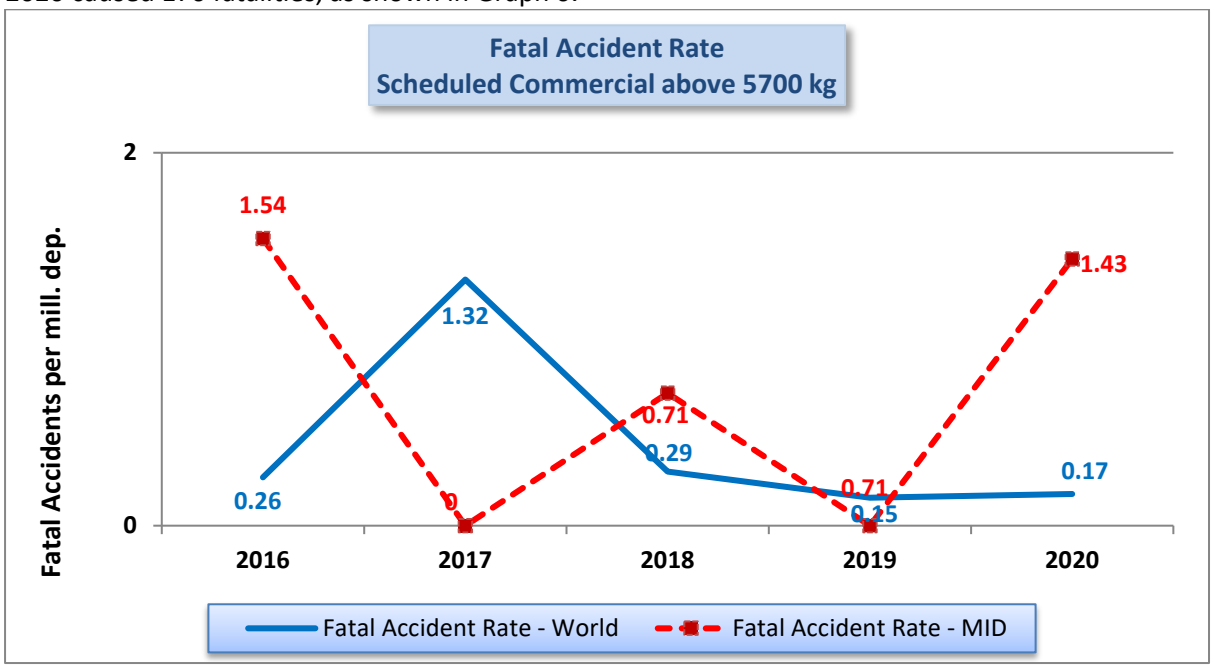
Graph 3: Global Accident Rate Vs. MID Accident Rate (Source OVSG Data& ICAO ASR 2021)

Graph 4 shows that 14 accidents occurred in the MID Region during the period (2016-2020), whereas (424) accidents occurred globally.

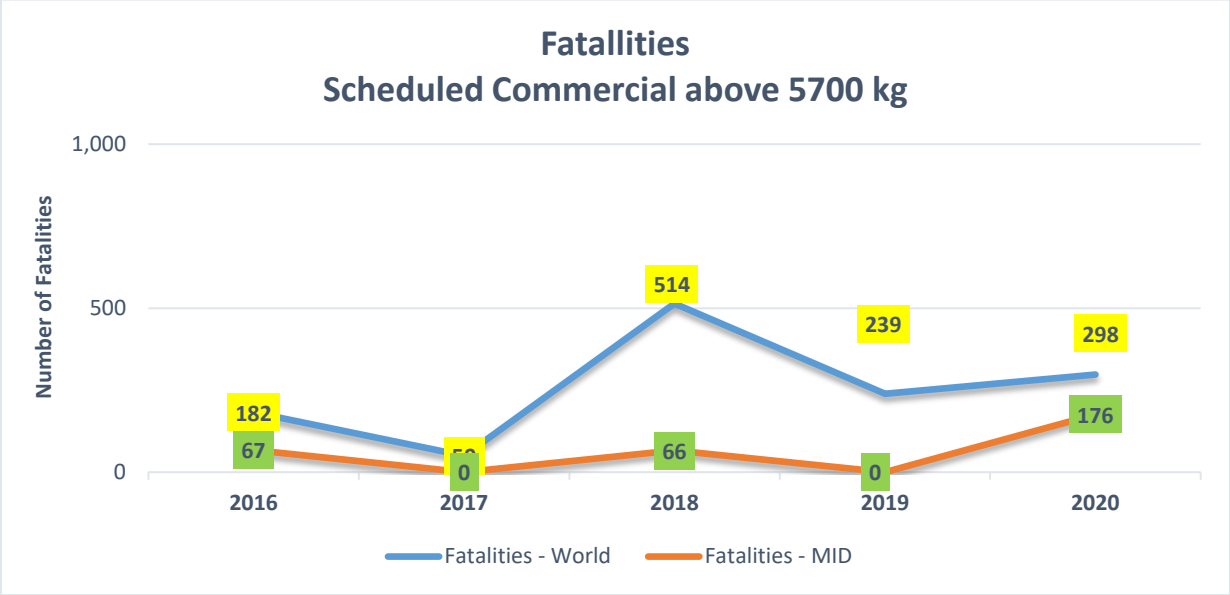


Graph 4: Number of MID Accidents Vs. Number of Global Accidents Per Year (Source OVSG Data& ICAO ASR 2021)

Graph 5 shows that the MID Region had a fatal accident in 2020. However, the 5-year average fatal accident rate for 2016-2020 is 0.73, which is above the global average rate (0.43) for the same period. The MID Region had no fatal accidents in 2017 and 2019. However, four fatal accidents occurred in 2016, 2018, and 2020. The 2016 accident caused 67 fatalities, 66 were registered in 2018, and the year 2020 caused 176 fatalities, as shown in Graph 6.

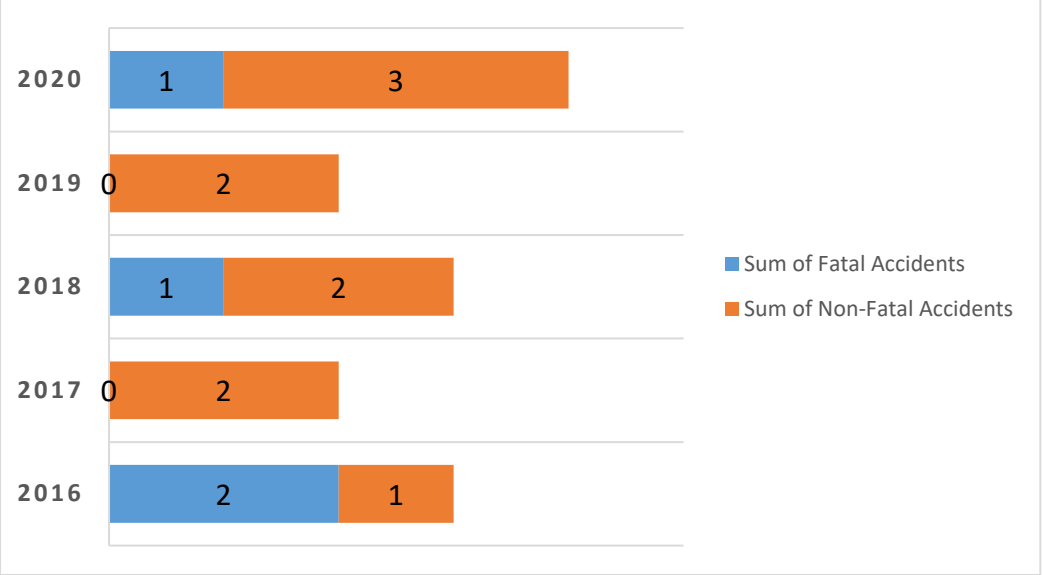


Graph 5: Global Fatal Accident Rate Vs. MID Fatal Accident Rate (Source OVSG Data& ICAO ASR 2021)



Graph 6: Number of MID Fatalities Vs. Global Fatalities (Source OVSG Data& ICAO ASR 2021)

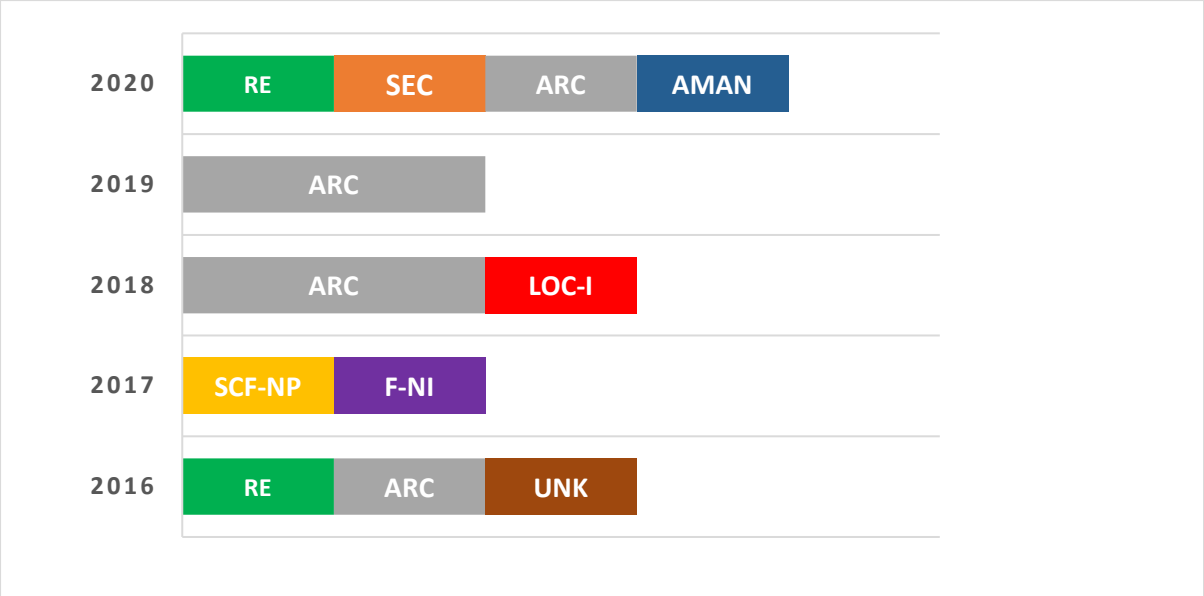
Graph 7 shows that 14 accidents occurred between 2016 and 2020. Four fatal accidents occurred, respectively during 2016, 2018, and 2020.



Graph 7: Number of Fatal Accidents Vs. Non-Fatal Accidents Per Year (2016-2020) (Source OVSG Data& ICAO ASR 2021)

2.2.1.2 Occurrence Category

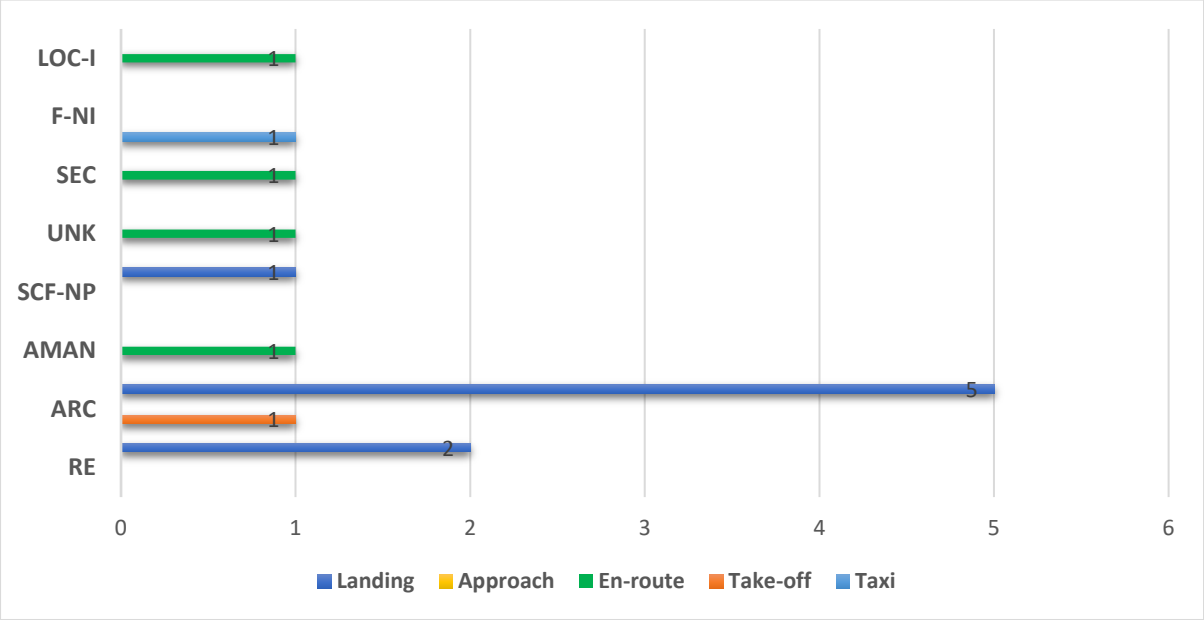
Graph 8 indicates that during the period (2016-2020), CFIT accidents have not been reported. However, the loss of control-inflight (LOC-I), runway excursion (RE), and abnormal runway contact (ARC) events represent the main areas of concern. In respect of the occurrence category Abrupt Manoeuver (AMAN), the flightcrew received TCAS RA and applied high rate of climb according to the TCAS display to prevent Mid air collision with military aircraft which caused injuries to some persons on board.



Graph 8: Distribution of Occurrence Category Per Year (2016-2020) ((Source OVSG Data& ICAO ASR 2021)

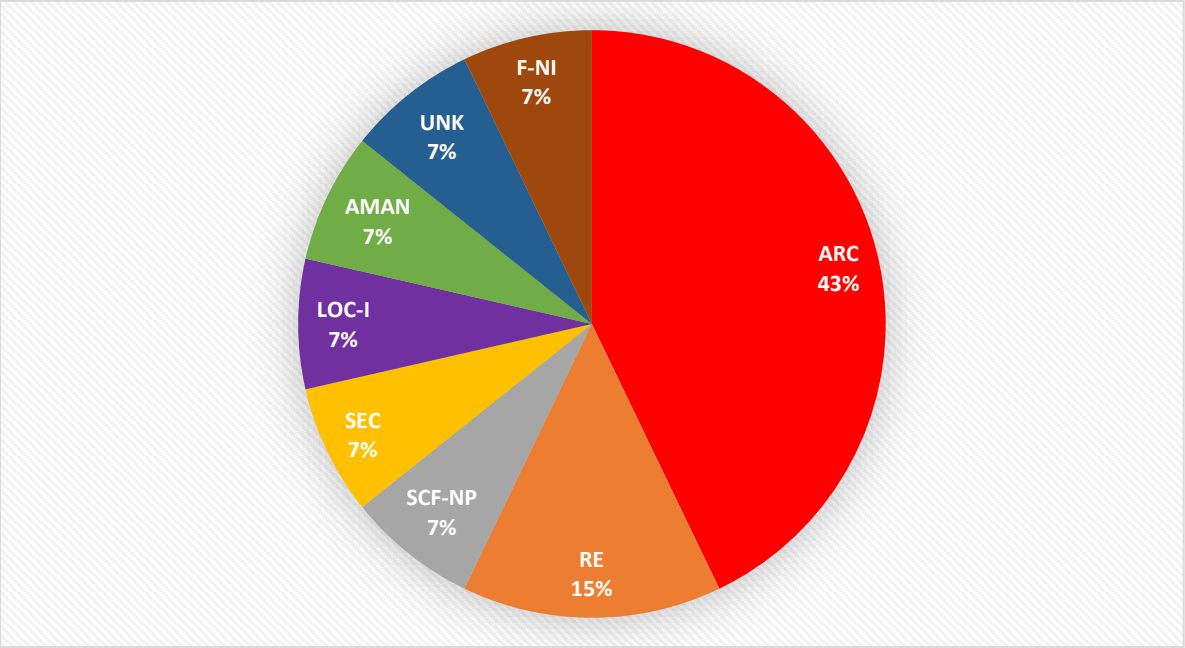
2.2.1.3 Phase of Flight

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. The Loss of Control-Inflight (LOC-I) occurred during En-route flight phase.



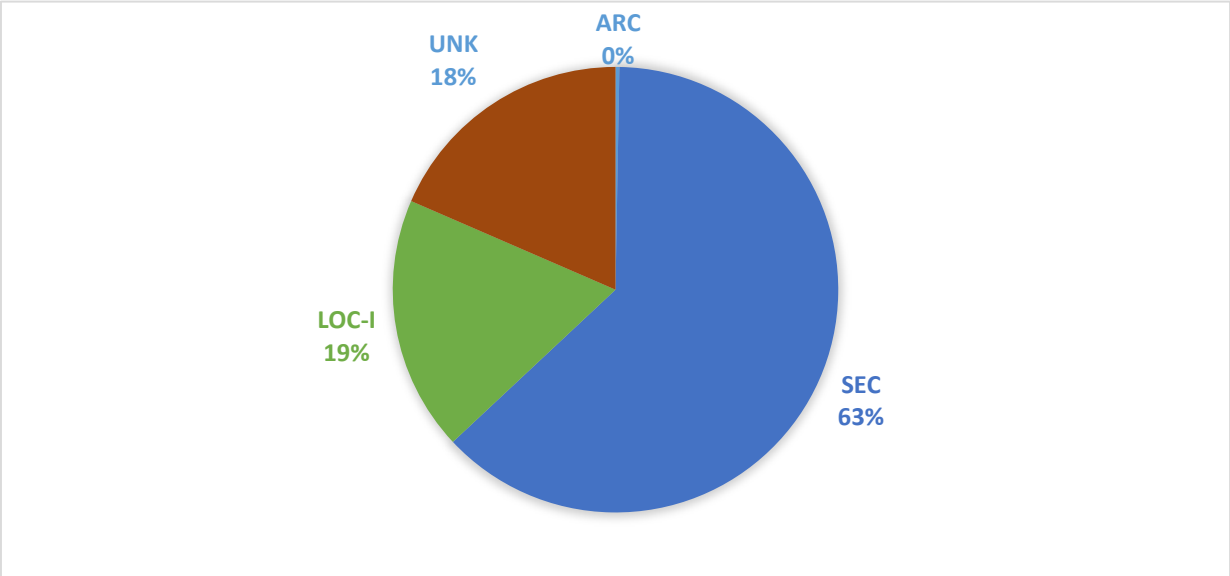
Graph 9: Distribution of Occurrence Category Per Phase of Flight (2016-2020) (Source OVSG Data& ICAO ASR 2021)

Graph 10 shows that most of the high risk category (HRC) accidents experienced during the 2016-2020 were ARC, RE, LOC-I, and MAC. It is to be noted that for the Abrupt Manoeuver (AMAN) occurrence category, the flightcrew received TCAS RA and applied high rate of climb according to the TCAS display to prevent Mid air collision with military aircraft which caused injuries to some persons on board. Therefore, the MAC occurrence category was also considered as HRC.



Graph 10: Occurrence Category Distribution as Percentage Per Accident (Source OVSG Data& ICAO ASR 2021)

Graph 11 shows that the fatalities for the period 2016-2020 were mainly associated to the following Occurrence Categories: Security related (SEC), Loss of Control-Inflight (LOC-I), and Unknown.



Graph 11: Fatalities Distribution as Percentage by Occurrence Category (2016-2020) (Source OVSG Data& ICAO ASR 2021

Taking a more in-depth look at the fatal accidents and accidents for the MID Region (State of occurrence) for the period 2016-2020, the following observations are made:

A. In terms of fatality, the top three fatal accidents categories in the MID Region are:

1. Security related (SEC);
2. Loss of Control-Inflight (LOC-I);
3. Unknown (UNK); and
4. Abnormal Runway contact- (ARC)

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. Near Mid Air Collision (NMAC);
3. System Component Failure – Non-Power Plant (SCF-NP); and
4. Fire/Smoke (F-NI).

Identification of the Key Risk Areas based on the analysis of accident data related to the State of Occurrence (2016-2020)

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)-(RE/ARC)	1	3	3
Security (SEC)	3	1	3
Near Mid Air Collision (NMAC)	4	1	4

System Component Failure – Non-Power Plant (SCF-NP)	4	3	12
Fire/Smoke (F-NI)	4	3	12

Table 3: Key Risk Area

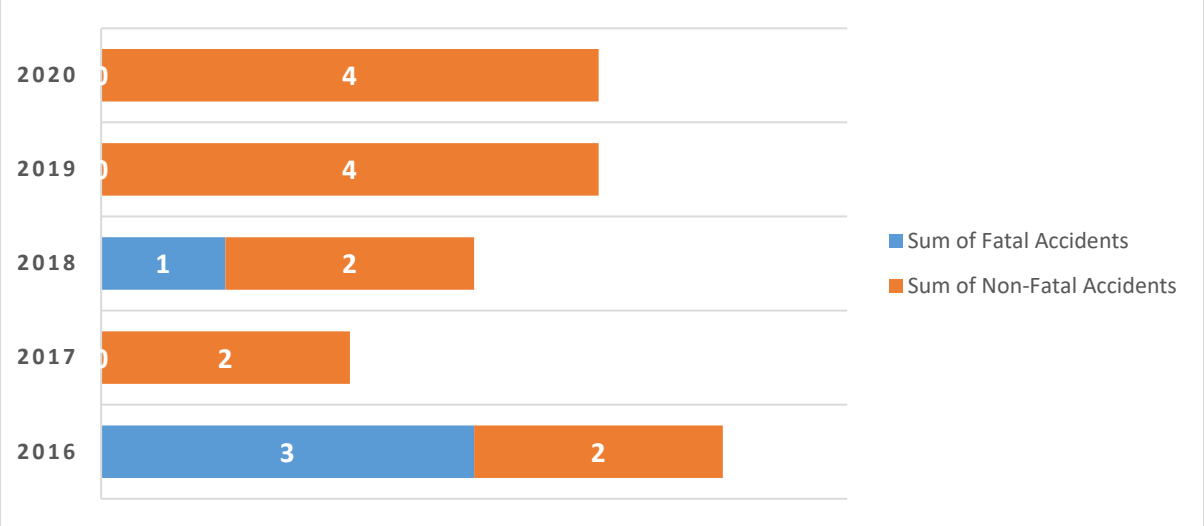
Therefore, the key risk areas according to the State of occurrence's accidents data are

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

2.2.2 MID State of Registry and Operator

2.2.2.1 Accident Data Analysis

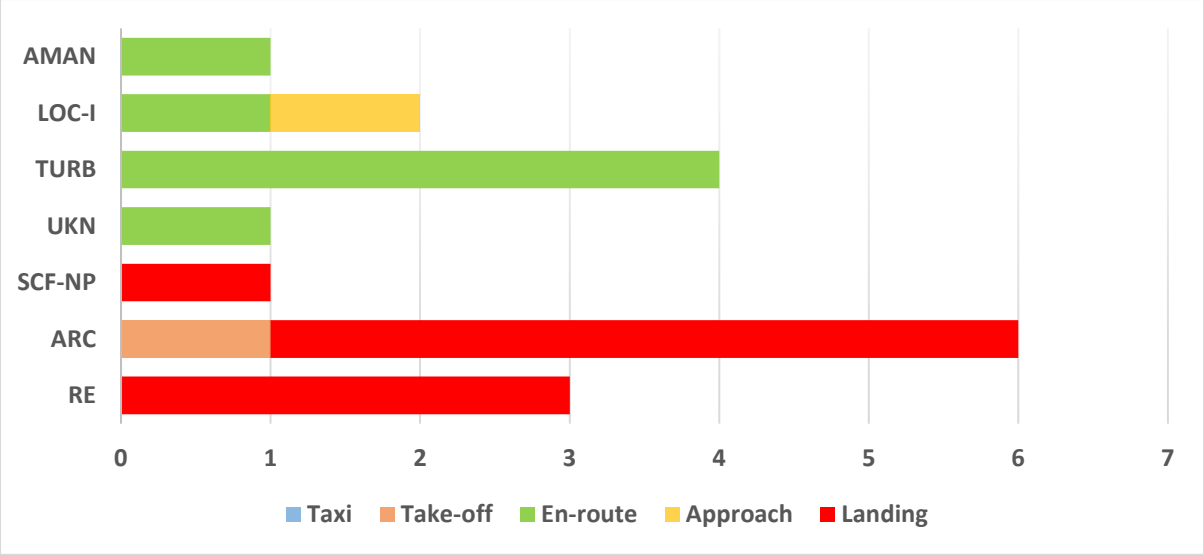
Graph 12 shows the change in the number of Fatal Accidents and non-Fatal Accidents over the last five years involving MID State of registry and State of operator airplanes. The Graph 12 also indicates that one fatal accident was recorded during 2018. Three fatal accidents occurred in 2016 involving MID 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 (2016-2020) Source OVSG Data& ICAO ASR 2021)

2.2.2.2 Phase of Flight

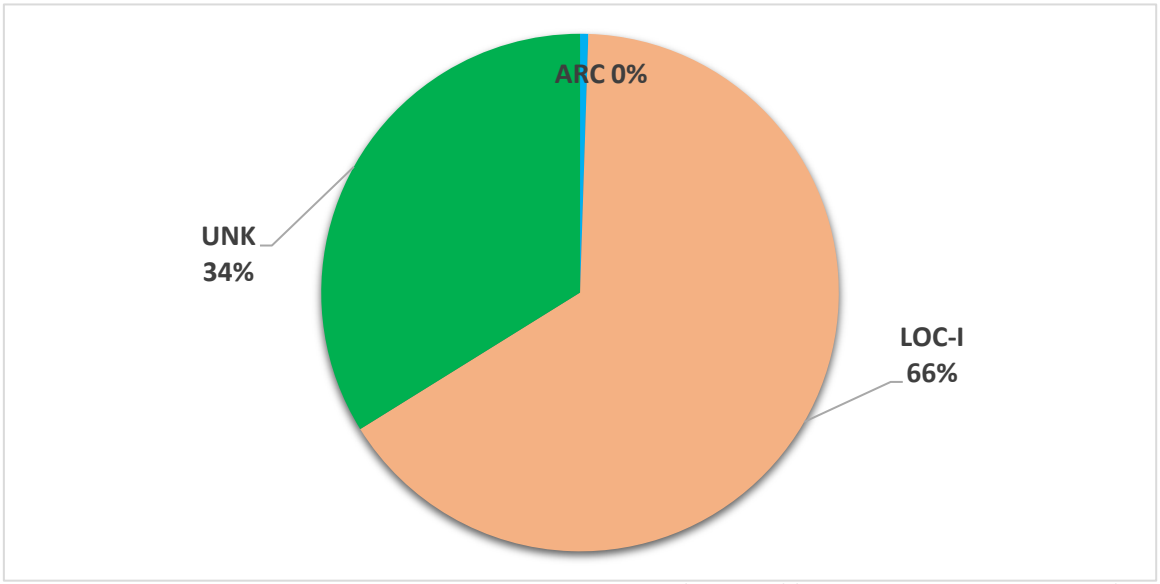
The Graph 13 shows that the majority of accidents related to Runway Excursion (RE), Abnormal Runway Contact (ARC), and system component failure- Non-power plant (SCF-NP) occurrence categories took place during landing flight phase. It was also noted that the Turbulence related accident occurred during 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 (2016-2020) (Source OVSG Data& ICAO ASR 2021

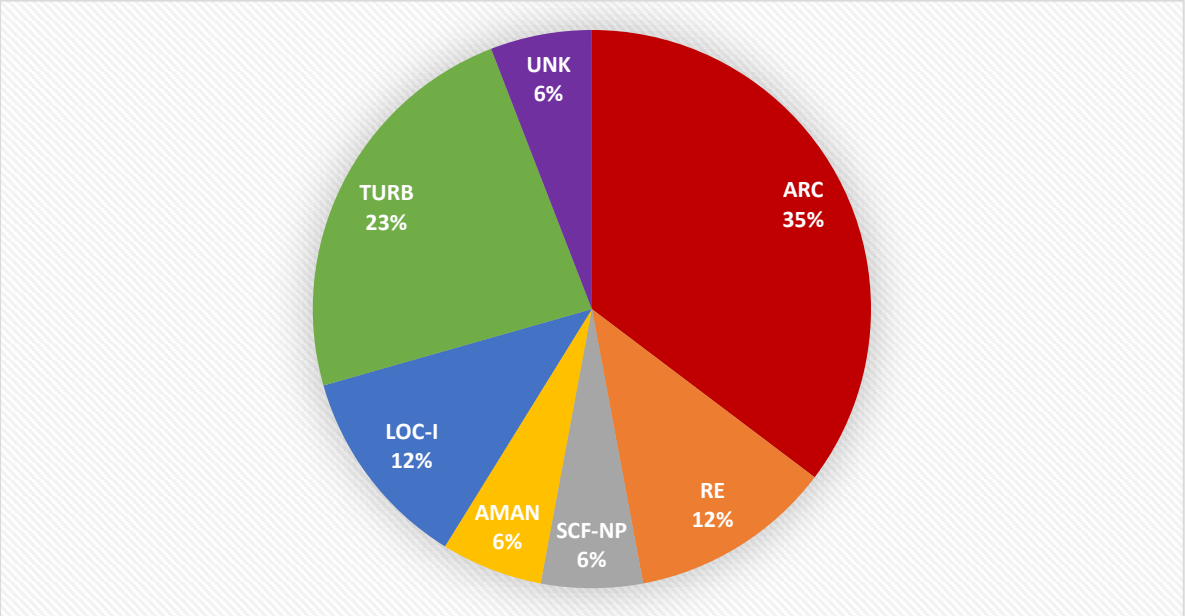
2.2.2.3 Occurrence Category

Graph 14 shows the percentage of fatalities associated with the accident Categories for the period 2016-2020: Loss of Control in flight (LOC-I), Unknown (UNK), and Abnormal Runway Contact (ARC).



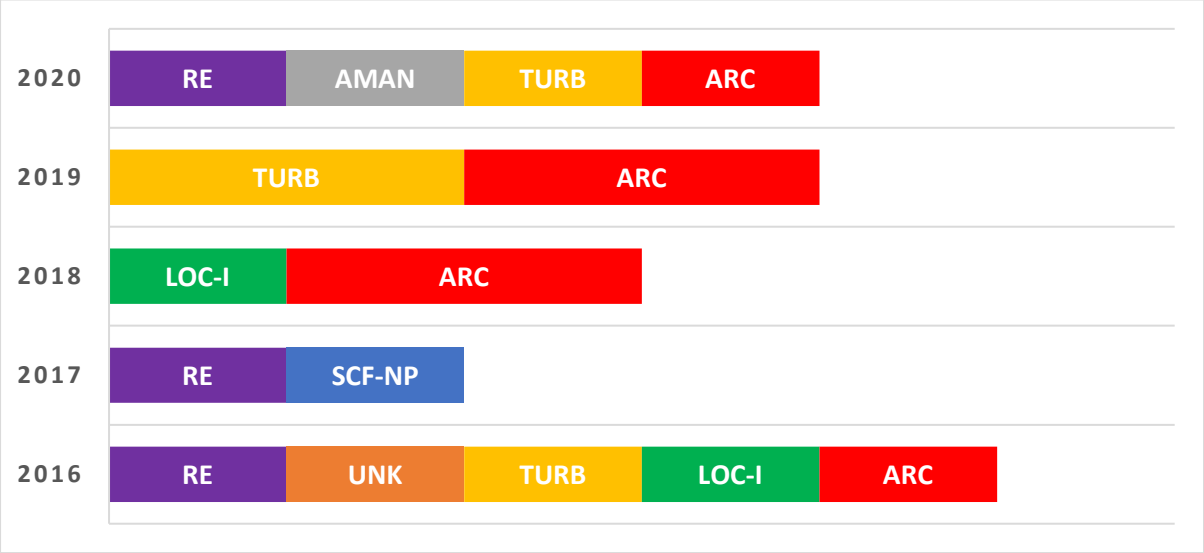
Graph 14: Fatalities Distribution as Percentage by Occurrence Category (2016-2020) (Source OVSG Data& ICAO ASR 2021)

Graph 15 shows that the high risk categories (HRC) identified are LOC-I, ARC, RE, and MAC. However, the RE and ARC are still the most frequent. Two LOC-I occurrences had also 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. It is to be noted that for the Abrupt Manoeuver (AMAN) occurrence category, the flightcrew received TCAS RA and applied high rate of climb according to the TCAS display to prevent Mid air collision with military aircraft which caused injuries to some persons on board. Therefore, the MAC occurrence category was also considered as HRC.



Graph 15: Accident Distribution as Percentage per Occurrence Category (2016-2020) (Source OVSG Data& ICAO ASR 2021)

During 2016-2020, 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. In respect of the occurrence category Abrupt Manoeuver (AMAN), the flightcrew received TCAS RA and applied high rate of climb according to the TCAS display to prevent Mid air collision with military aircraft which caused injuries to some persons on board. Turbulence (TURB) events were registered and are still prevailing as shown in Graph16.



Graph 16: Accident Category Distribution per Year (Source OVSG Data& ICAO ASR 2021)

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 2016-2020, the following is to be highlighted:

A. In terms of fatality, the fatal accidents categories in the MID Region for the period 2016 – 2020 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 2016 – 2020 are:
   1. Runway Safety (RS) (REand ARC);
   2. Turbulence encounter (TURB);
   3. Near Mid Air Collision (NMAC); and
   4. System Component Failure- Non-Power Plant (SCF-NP).

Identification of the key risk Areas based on the analysis of safety data related to the State of registry and State of operator (2016-2020)

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)-(RE/ARC)	1	3	3
Mid Air Collision (MAC)	3	1	3
Turbulence (TURB)	2	5	10
System Component Failure- non power plan (SCF-NP)	4	4	16

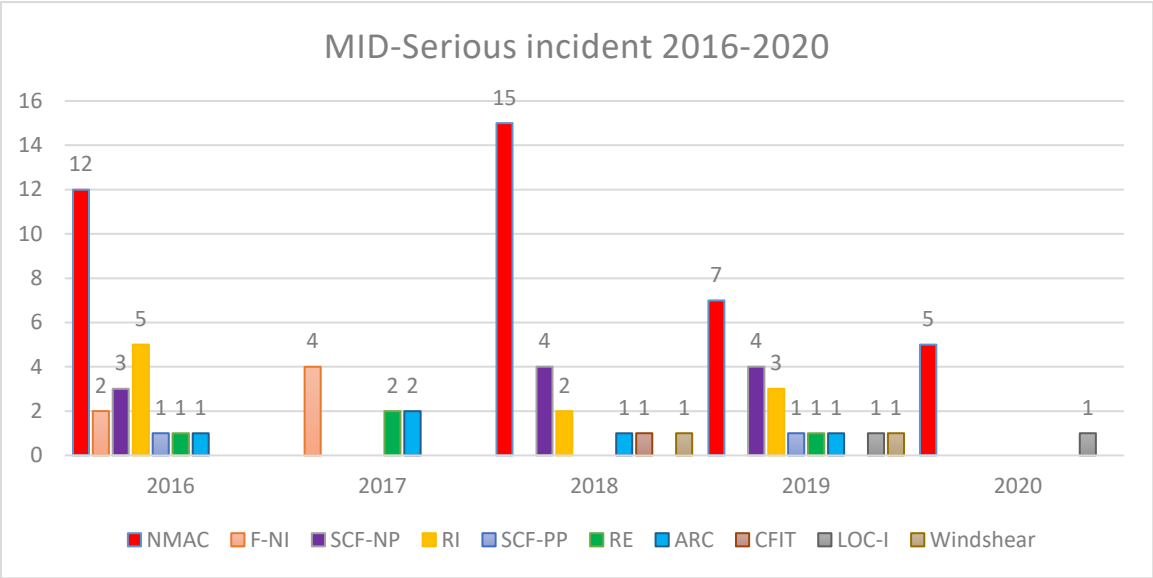
Table 4: key Risk Area

Therefore, the key risk areas according to the State of registry and operator 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. Mid Air Collision (MAC).

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 2016-2020



Graph 17: Number of Serious Incidents Distribution Per Year (2016-2020)

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 2016-2020, 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).

With respect to the Mid Air collision (MAC)/ NMAC: The most common root causes for MAC occurrences are Human performance errors and Ineffective training for ATCs. In addition, this key risk area has been raised by some MID States specifically in the context of the collision risk posed by military aircraft operating in Gulf area over the high seas which are not subject to any coordination with related FIRs for airborne operation.

For the System Component Failure-Non-Power Plant (SCF-NP): Unexpected technical failure, lack of maintenance, not complying with the ICAO standards for Air Operator Certificates (AOC) & Operations Specifications, flying with Minimum equipment limitations
The main safety issues indentified and shared by the States as follows:

- Regulatory oversight
- Human factors and competence of personnel
- EGPWS warning
- TCAS/RA
- Runway Incursion
- Low level wind shear
- Technical failures

2.2.3 ICAO In-depth Analysis of Accidents

2.2.3.1 Runway Excursions and Abnormal Runway Contact:

During 2016-2020, 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**	High Airspeed and Low Engine Thrust. 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 2016-2020 Aircraft upset or Loss of control contributed to two accidents and counted for around 19% 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 2016-2020		2020	
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**	2.67	2.44	5.76	2.14
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**	0.73	0.43	1.43	0.17
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**	0.43	0.37 **(2017-2020)**	1.43	0.4
Number of Runway Incursion accidents per million departures	Regional average rate of Runway Incursion accidents to be below the global average rate	**0**	**0 (2017-2020)**	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	0.07	**0**	0.04

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

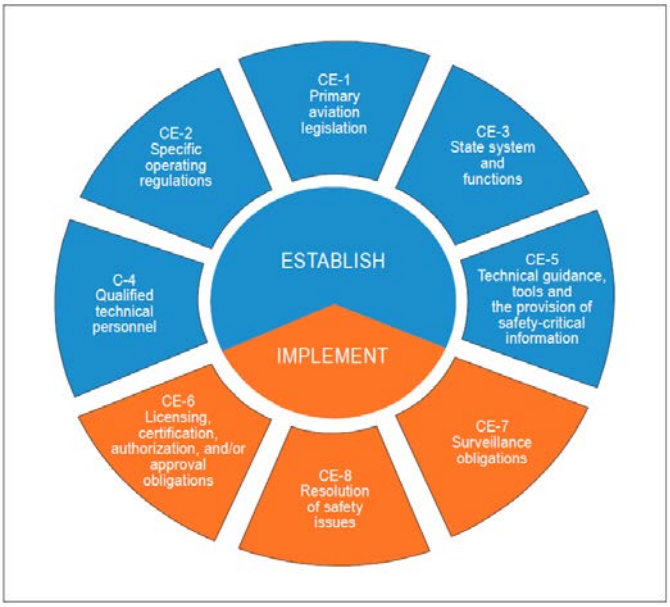
This section of the Annual Safety Report focuses on proactive/predictive safety data analysis to identify organizational issues that forms the basis for the development of SEIs.

3.1 ICAO USOAP-CMA

3.1.1 USOAP-CMA Review

Each ICAO Member State is expected to establish and maintain an effective safety oversight system that addresses all safety-related areas of aviation activities. The Universal Safety Oversight Audit Programme (USOAP) Continuous Monitoring Approach (CMA) measures the effective implementation (EI) of a State's safety oversight system.

In order to standardise the audits conducted under the USOAP CMA, ICAO established protocol questions (PQs) based on safety-related ICAO Standards and Recommended Practices (SARPs) established in the Annexes to the Chicago Convention, the Procedures for Air Navigation Services (PANS), and supporting ICAO guidance material. The PQs contribute to assessing the eight critical elements (CEs) of a State's safety oversight system.

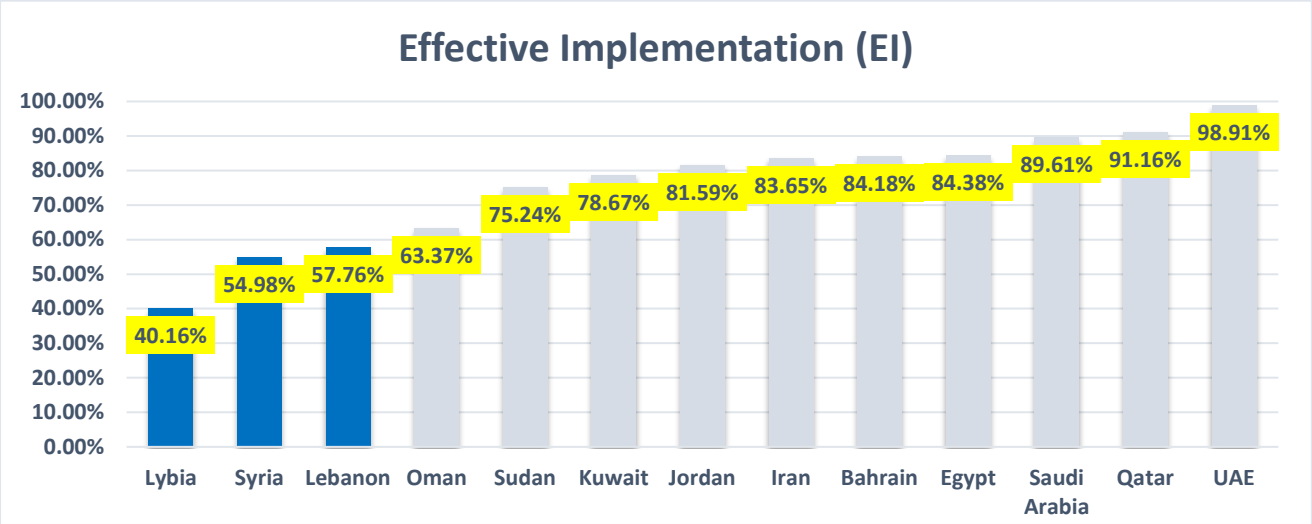


Graph 18. Critical elements of a State's safety oversight system

The COVID-19 pandemic has had an unprecedented effect on the USOAP CMA's planned activities. The Programme managed to conduct two audits and three ICAO Coordination Validation Missions (ICVM) before the suspension of all on-site activities in March 2020. The pandemic restrictive measures forced USOAP CMA to postpone nearly 30 audits and validations. Resources were redirected

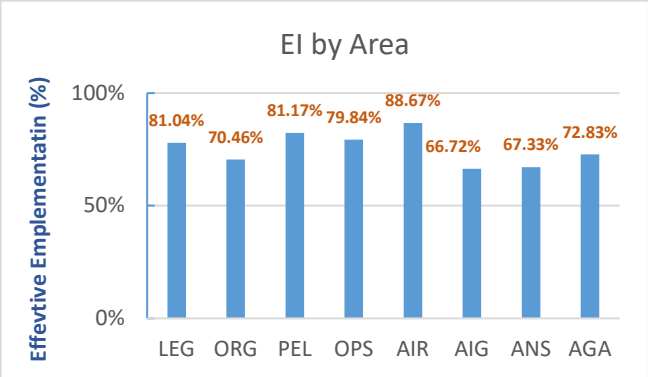
to focus on off-site and virtual activities. As a result, two documentation-based (desk) audits, two virtual ICVMs, and 18 off-site validation activities were completed by the end of the year.
The regional average overall Effective Implementation (EI) in the MID Region (13 out of 15 States have been audited) is 76 %, which is above the world average 68.68 % (as of 24 May 2021). Three (3) States are currently below EI 60%.

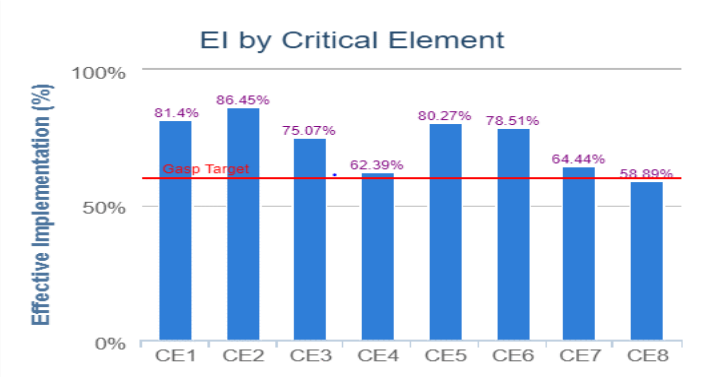
Currently, 77% of the audited States achieved the target of 60% EI, as suggested by the Global Aviation Safety Plan (GASP) and the MID Region Safety Strategy.



Graph 19: Source: ICAO USOAP CMA Online Framework (OLF) & iSTARS, as of 24 May, 2021

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% (62.39%) EI, whereas CE8 (resolution of safety issues) is the only one below EI 60% (58. 89%) EI.





Graph 20: Source: ICAO iSTARS, as of 24 May 2021

3.1.2 ICAO USOAP CMA Activities — MID States Status for 2020

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.

USOAP CMA on-site activities for 2020 have been postponed due to the glolbal pandemic restrictions.

State/organization	Type of activity	Date	Status
Iraq	Audit (desktop)	23 Dec 19 to 19 Feb 20	**Completed**
Libya	Audit (desktop)	24 Aug to 11 Sep 2020	**Completed**
Kuwait	ICVM	8 to 15 Jun 2020	Postponed to 2021
Oman	Audit	23 Feb to 4 Mar 2020	**Completed**
Saudi Arabia	Audit (cost-recovery)	8 to 19 Dec 2020	Postponed

Table 8: ICAO USOAP CMA Activities — MID States Status for 2020

3.2 MID Region State Safety Programme (SSP)

3.2.1 SSP Implementation Assessments (SSPIAs)

ICAO launched SSP Implementation Assessments (SSPIAs) under the USOAP CMA. The assessments are based on a qualitative assessment of a State's progress in implementing a State Safety Programme (SSP), using SSP-related PQs. The PQs are reflective of Annex 19- Safety Management and the Safety Management Manual (Doc 9859).

Unlike the USOAP CMA's audit activities, SSPIAs are linked to applicable SSP components rather than critical elements (CEs). The SSP components are:

1. State safety policy, objectives and resources;
2. State safety risk management;
3. State safety assurance; and
4. State safety promotion

The SSP assessment covers 8 areas as indicated below:

1. SSP general aspects (GEN);
2. safety data analysis general aspects (SDA);
3. personnel licensing and training (PEL);
4. aircraft operations (OPS);
5. airworthiness of aircraft (AIR), approved maintenance organization (AMO) aspects only;
6. air navigation services(ANS), air traffic services provider (ATSP) aspects only;
7. aerodromes and ground aids (AGA); and
8. aircraft accident and incident investigation (AIG).

From 2018 to 2019, ICAO conducted three voluntary and non-confidential SSPIAs under Phase 1. This first phase of SSPIAs involved voluntary assessments of States regarding their progress in implementing an SSP and any planned steps or future enhancements to the programme. Three additional assessments were scheduled in 2020; however, they were postponed, due to global pandemic restrictions.

In 2020, ICAO developed guidance supporting the determination of maturity levels for each SSP-related PQ. The SSP-related PQs, complemented by the maturity level matrices for each of the SSP audit areas, are available in the CMA Library of the USOAP CMA Online Framework (OLF) at www.soa.icao.int (restricted access). These matrices describe the level of progress for each element of the SSP, which can be described as:

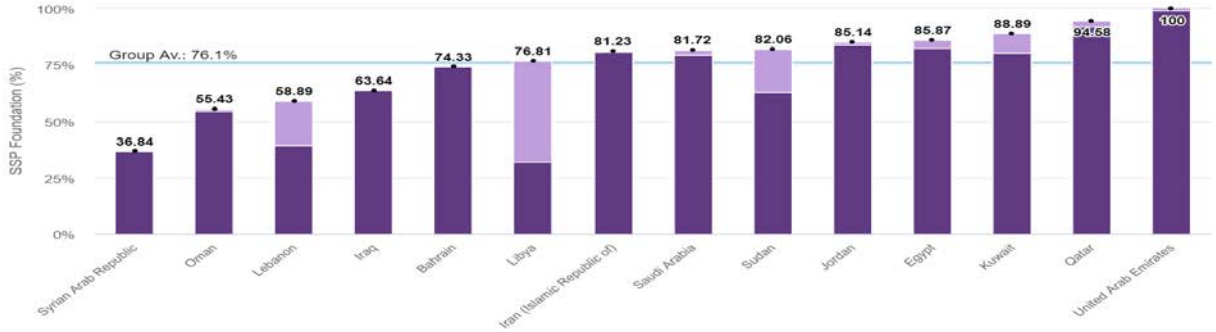
- Present and effective
- Present
- Not present but being worked on; or
- Not present and not planned

ICAO will use the SSP maturity level matrices for the scheduled SSPIAs under Phase 2, which will begin in 2021. This phase of assessments will utilize the maturity level matrices to provide a more detailed, quantitative measurement of a State's progress in the implementation and maintenance of its SSP.

3.2.2 SSP Foundation

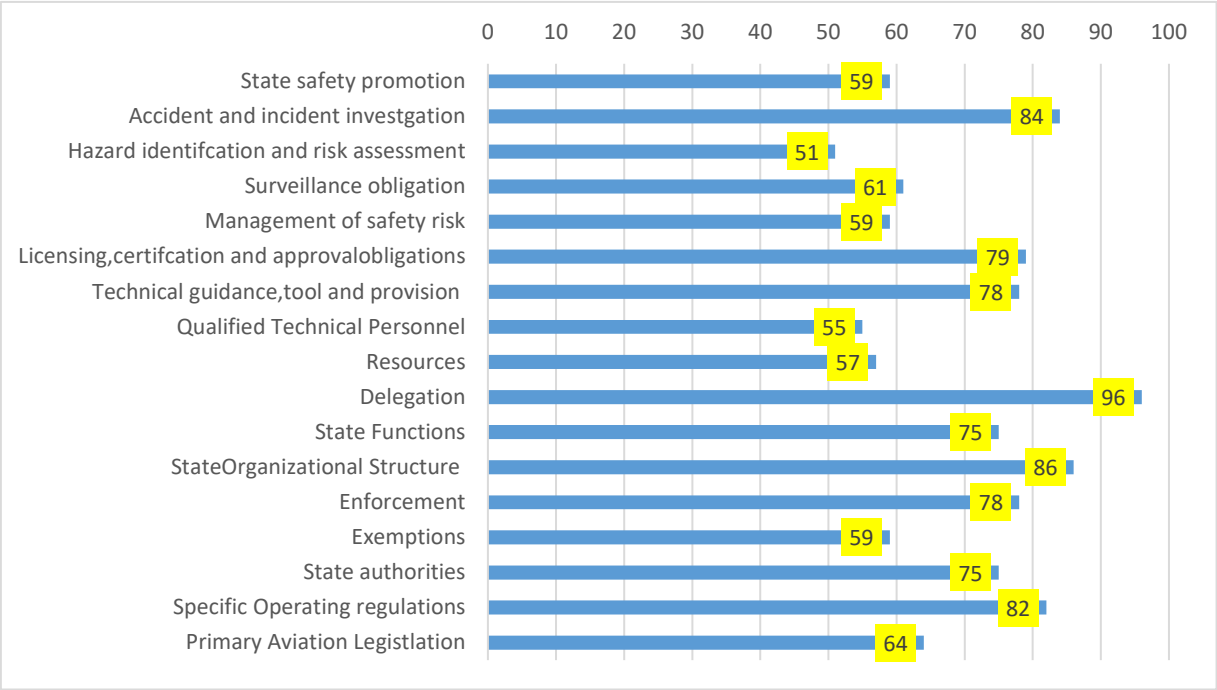
Safety Management Tools: The full list of SSP Foundation PQs can be found on the SSP Foundation tool, available on iSTARS since 2017.

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, 1%. The SSP foundation EI for MID Region States is shown in the graph 21 below. The global average EI of SSP Foundation PQs increased from 73.71 in March 2020 to 74.06 per cent in March 2021.



Graph 21: Overall SSP foundation for MID Region States (Source: iSTARS as of 24 May 2021)

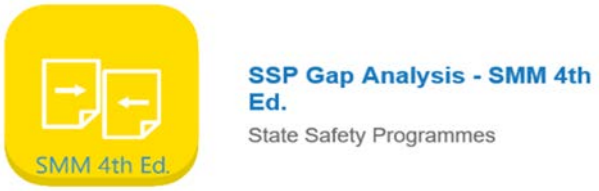
The sub-set of PQs are grouped by 17 subjects based on the Annex 19 amendment 1 and the 4th edition of the Safety Management Manual (forthcoming). States with EI above 60% may still have PQs to address which are fundamental for their SSP. Hazard identification and risk assessment is the lowest one with 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 24 May 2021)

3.2.3 SSP Gap Analysis

Safety Management Tools: The application was updated in 2019 to reflect Amendment 1 to Annex 19 and the 4th edition of the SMM. It now comprises 62 questions, which cover all the requirements of an SSP and provides project owners the opportunity to develop an implementation plan to address the gaps identified.



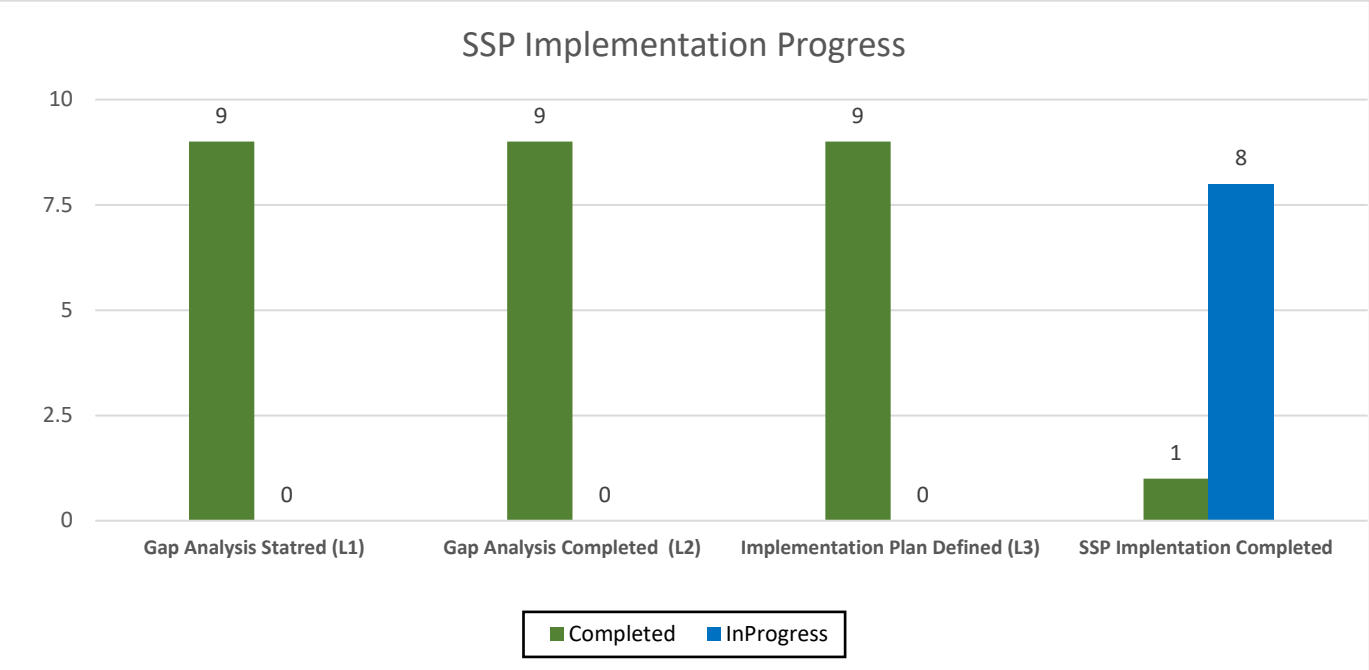
These PQs can be prioritised and addressed when conducting the SSP gap analysis or while defining the SSP implementation/action plan. States can use the ICAO iSTARS online to perform an SSP Gap Analysis-SMM 4th Edition. This provides an indication of the broad scope of gaps and hence overall workload 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 23 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.

State Safety Programme (SSP) Implementation

ICAO measures SSP implementation in levels as follows:

- Level 1: States having started a GAP analysis
- Level 2: States having reviewed all the GAP analysis questions
- Level 3: States having defined an implementation plan to address the gaps
- Level 4: States having closed all actions and fully implemented their SSPs

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 24 May 2021)

3.2.4 Implementation Packages

On 17 July 2020, ICAO issued Electronic Bulletin 2020/40 informing States of the availability of implementation packages (iPacks) to support States in their response, recovery and resilience efforts following the COVID-19 outbreak. An iPack is a new ICAO initiative, which bundles standardized guidance material, training, tools, checklists and subject matter expert support to facilitate and guide the implementation of ICAO provisions for State entities (e.g. governments, civil aviation authorities (CAAs), national air transport facilitation committees), aviation service providers, supply chain stakeholders and their personnel.

iPacks are developed and implemented in full alignment with the measures and recommendations contained in the Council Aviation Recovery Task Force (CART) Report.

The Aviation Safety Risk Management (ASRM) related to COVID-19 for CAAs iPack aims to support, facilitate and guide CAAs in applying safety management principles, improve decision-making processes to address COVID-19 challenges and support the safe operation of aircraft. The iPack- ASRM related to COVID 19 is being implemented by ICAO for Oman (as a pilot project).
The aerdrome Restart aims facilitate and guide Civil Aviation Authorities and/or aerodrome operators in applying Annex 14 and other relevant ICAO provisions, to ensure safety, regularity and efficiency of aerodrome operations after a partial or full aerodrome closure due to the COVID-19 pandemic.
Thus, the Aviation Safety Risk Management related to COVID-19 for CAAs and aerodrome Re-start iPacks have been deployed to support States in the MID region.

3.2.5 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 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
- 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;
- 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 and activation process.

- Several Safety Management Workshops, training courses, webinars, 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 SSPs by States and the SMS by service providers as established in the Annex 19, Safety Management, GASP 2020-2022 Edition, and MID-RASP 2020-2022 Edition. 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. Its handbook is being drafted to support States with SSP implementation in an effective and efficient manner.

3.3 Human Factors and Competence of Personnel

As the aviation system changes, it is imperative to ensure that human factors and the impact on human performance are taken into account, both at service provider and regulatory levels. Human factors and human performance are terms that are sometimes used interchangeably. While both human factors and human performance examine the capabilities, limitations and tendencies of human beings, they have different emphases:

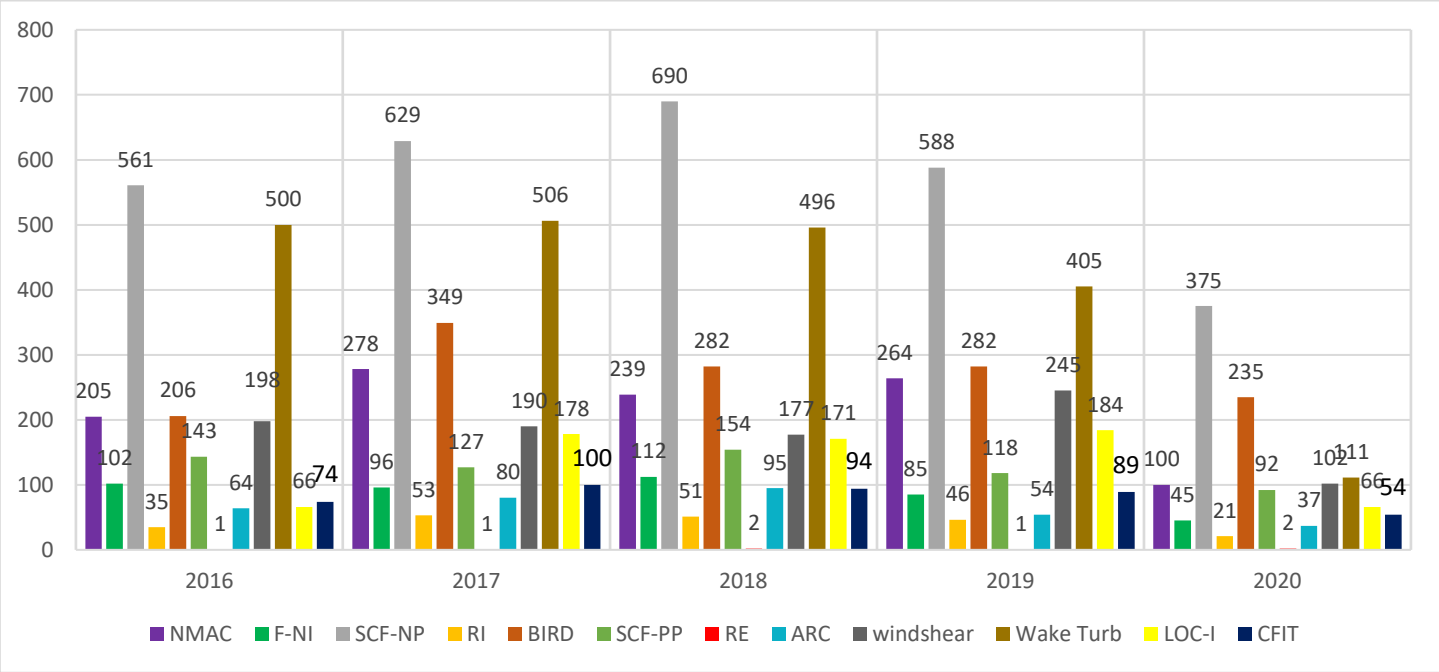
- Human Factors (HF)- this term focusses on why human beings function in the way that they do. The term incorporates both mental processes and physical ones, and the interdependency between the two.
- Human Performance (HP)- the output of human factors is human performance. This term focusses on how people do the things that they do.

As new technologies emerge on the market and the complexity of the system continues increasing, it is of key importance to have the right competencies and adapt training methods to cope with new challenges. Crew Resource Management (CRM) has been identified in the MID ASR as a safety issue in the domain of commercial air transport. In addition, Team Resource Management (TRM) was introduced into ATC following the success achieved with CRM in the airline community enhancing teamwork practices. The practice is applied within virtually every airline with training given to pilots and other operational staff.
Within the last decade in ATM there have been numerous advances in widespread acceptance of SMS under the guidance of ICAO. ICAO has now mandated the use of SMS Manual Doc 9859 to standardize the approach to safety. TRM as defined by ICAO is an integral component of SMS under human factor.

3.4 Incidents Data

3.4.1 Incident Data shared by States for the Period 2016-2020

Graph 24 below shows that the number of system component system-non-power plant (SCF-NP) incidents reported is the highest one, followed by Wake Turbulence, airborne conflict incidents (near mid-air collision) and birds. For an in-depth analysis and to identify the underlying safety issues, MID States should provide further safety information and safety analysis in order to come out with strategic initiatives and mitigations.

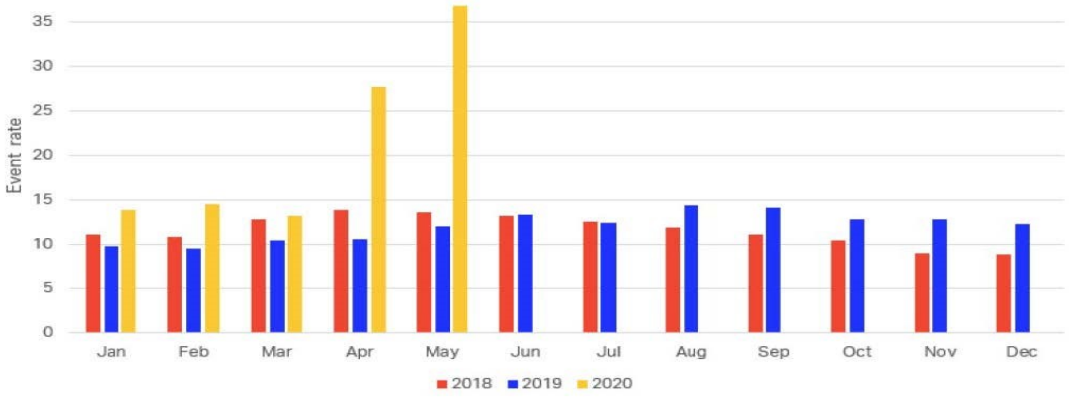


Graph 24: Total number of incidents provided by the MID States for the period 2016-2020

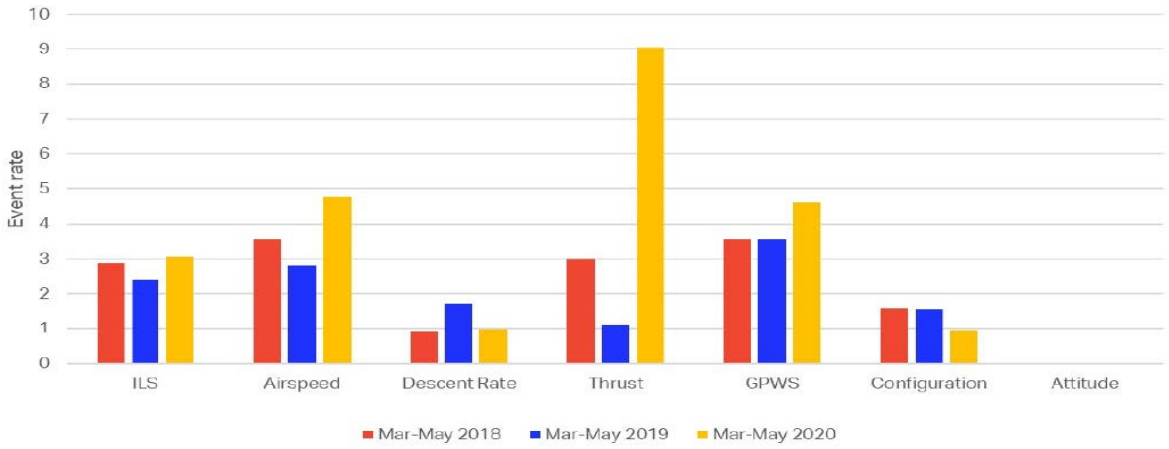
3.4.2 IATA FDX (Flight Data Exchange)

Unstable Approaches

Aviation Industry experienced an increased number of Unstable Approaches as recorded in the IATA FDX (Flight Data Exchange) database. IATA's FDX shows an increase in unstable approaches per 1000 operations, when compared to the past two years, over the first half of 2020. The data shows deviations from normal flight operations.

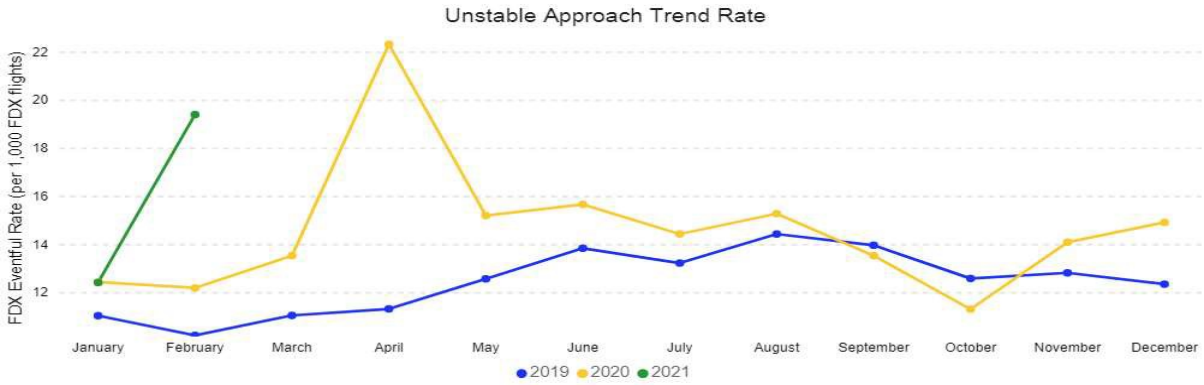


Graph 25: Unstable Approach Trend Rate

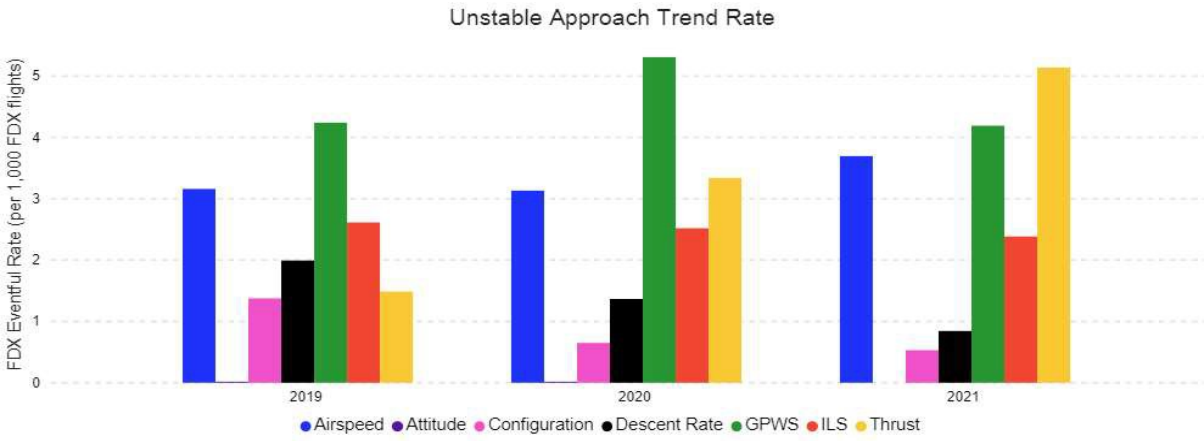


Graph 26: Unstable Approach Contributing Factors

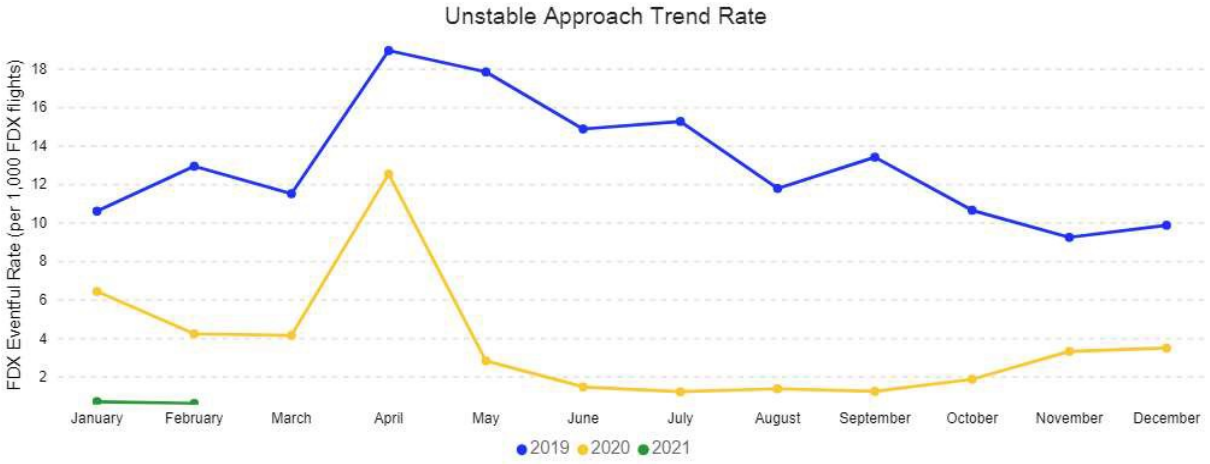
High Airspeed and Low Engine Thrust identified as key contributing factors to the Unstable Approaches Events.



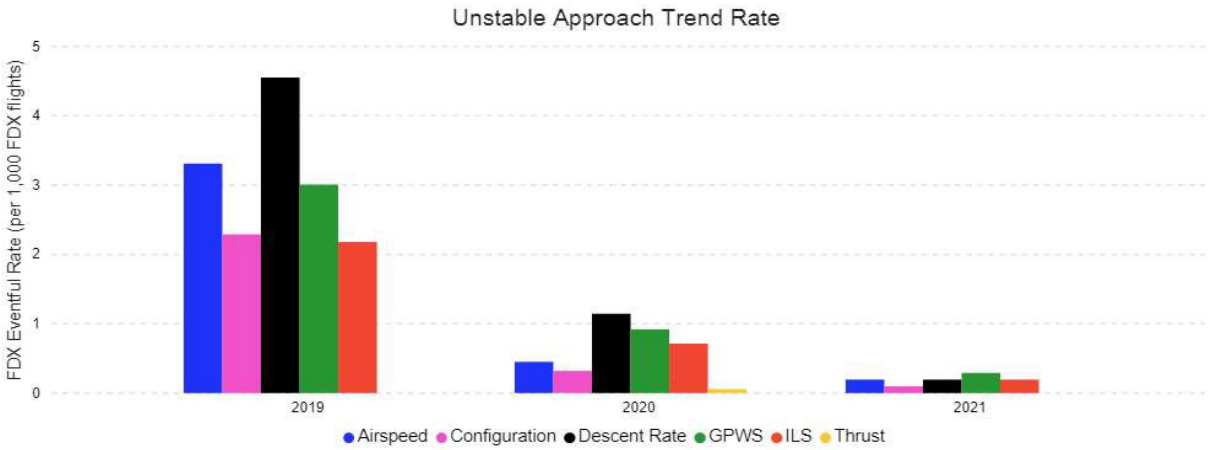
Graph 27: Unstable Approach – Global



Graph 28: Unstable Approach Trend Rate – Global



Graph 29: Unstable Approach – MENA Region



Graph 30: Unstable Approach – MENA Region

As a recommendations: operating crew are urged to follow airline Standard Operating Procedures (SOP); adhere to stabilized approach criteria; and review actions required to conduct a missed approach and go-around. In addition, Airlines and regulators should consider and encourage decisions to execute go-arounds by crews and there should be a clear non-punitive go- around policy.

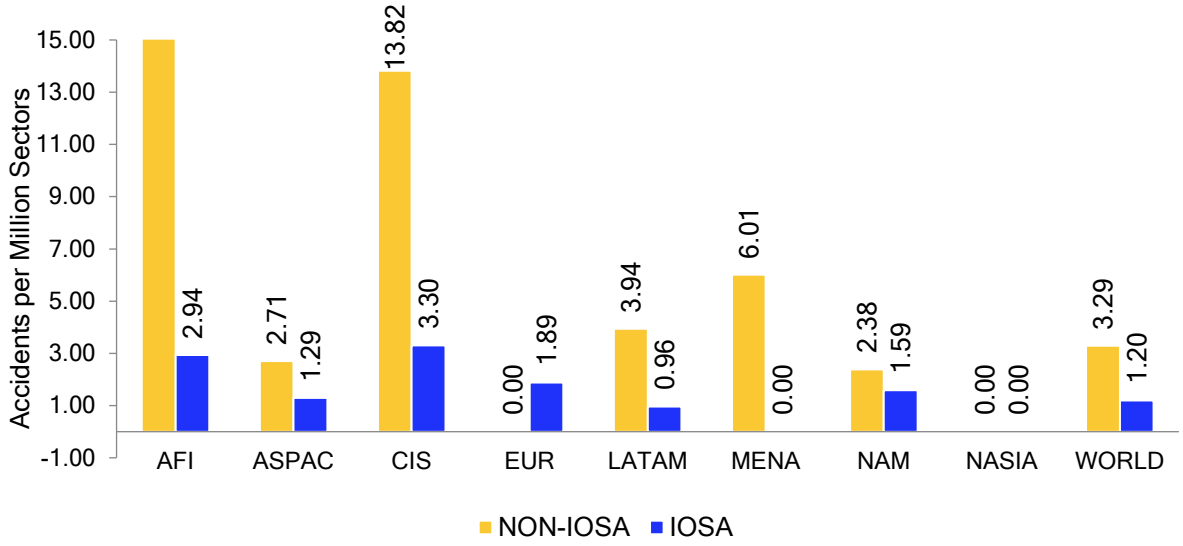
3.5 IATA Data

3.5.1 IATA Operational Safety Audit (IOSA)

IOSA is an internationally recognized and accepted evaluation system designed to assess the operational management and control systems of an airline. The program aims to increase global safety performance and reduce the number of redundant auditing activities in the industry.
There are currently **431** airlines on the IOSA Registry of which **138** (34%) are non-IATA Members.
In 2020 IATA has introduced the IOSA Support Program to offer a safety focused, attainable, flexible and effective approach in light of the COVID-19 crisis. The Support Program includes a series of relief measures for IOSA registered operators and IOSA auditors to manage the impact of COVID-19, while maintaining critical safety assurance.
Until 31 July 2020, operators unable to undergo or complete a registration renewal audit prior to their expiry date were given the opportunity to submit a claim of Extenuating Circumstances for Audit Conduct. A validated claim granted them an additional 180 calendar days following the current expiry

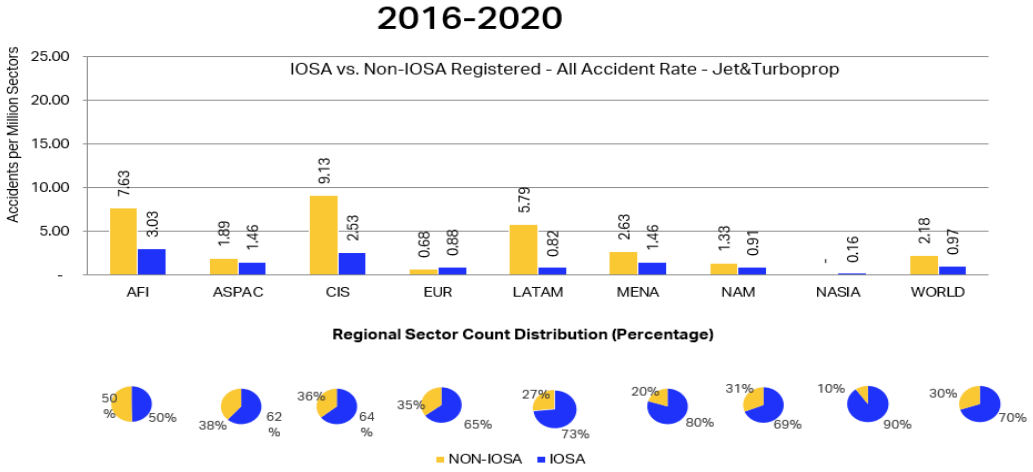
date. Following 31 July 2020, this option has remained available for operators that ceased operations due to COVID-19.
In July 2020, IATA has introduced a reduced scope **remote IOSA Audit** option while the full scope on-site audit option remains available.
The IOSA program continued to be acknowledged by numerous regulators and is utilized to complement their oversight activities, especially during the COVID-19 crisis. Regulators and organizations, including, UAE GCAA signed a Memorandum of Understanding (MoU) with IATA on the use of the IOSA program.

IOSA registered airlines outperformed non-IOSA airlines in MENA. The accident rate among non IOSA registered operators for 2020 was above MENA IOSA registered airlines **average by 6.01.**



Graph 31: IATA IOSA VS NON IOSA Accident rate (Jet & Turboprop)

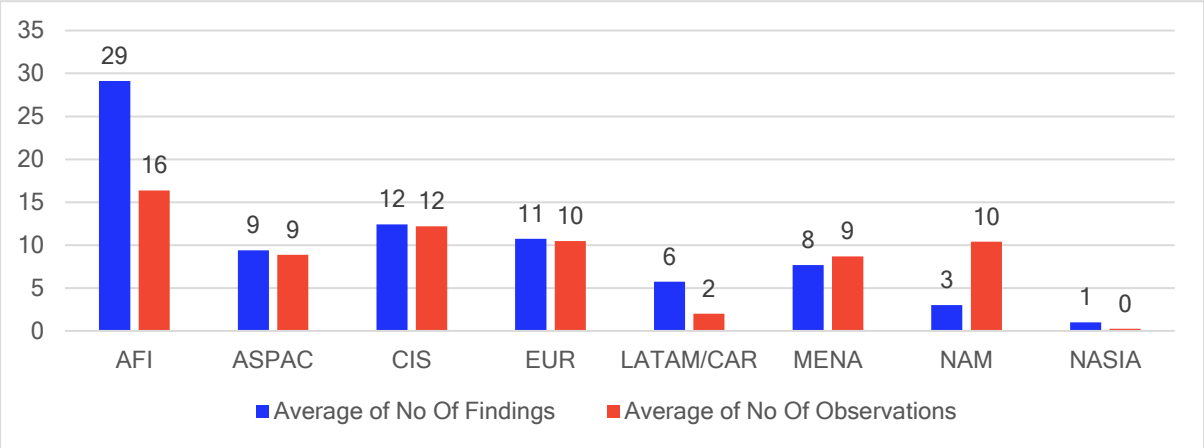
The full year accident rate (Global) for all IOSA carriers in 2020 is lower than the rate for non-IOSA carriers (**1.20 vs. 3.29**).



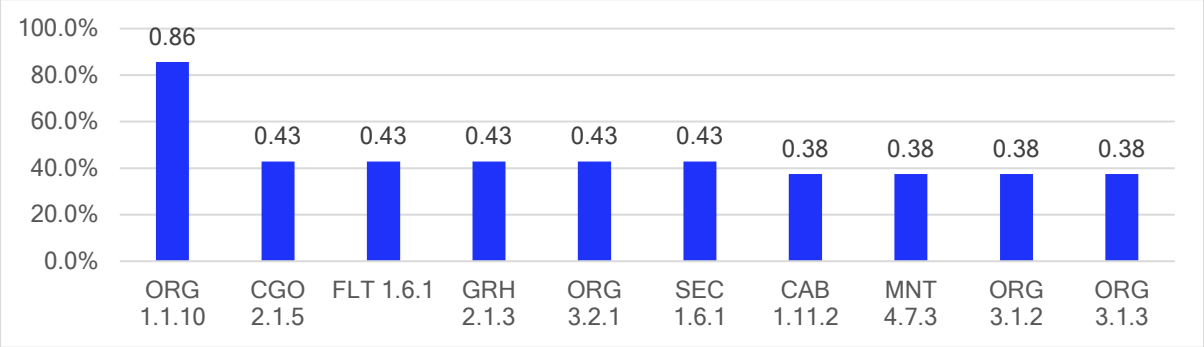
Graph 32: IATA IOSA VS NON IOSA Accident rate

The 5 years average (2016-2020) shows IOSA registered airlines keep outperforming non-IOSA airlines in **MENA (1.46 vs. 2.63).**

During 2020, a total of **34 audits** were performed under the IOSA Program of which **11** were initial audits. In the first quarter 2021 , 91 audits performed which represent 167% increase from 2020 audits performed.



Graph 33: IOSA Average Findings 2020



Graph 34: Audits Findings Ratio per discipline

Findings were mainly in the areas of Organization Management (ORG), Flight Operations (FLT) Control of documentations; Ground Handling Operations (GRH) and Cargo (Training of personnel) , **around 86% of the Top 10 Finding** are related to SMS implementation throughout the whole organization, and most of them are located at Organizational level. The graph 34 demonstrates the number of average findings per discipline.

3.5.2 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.

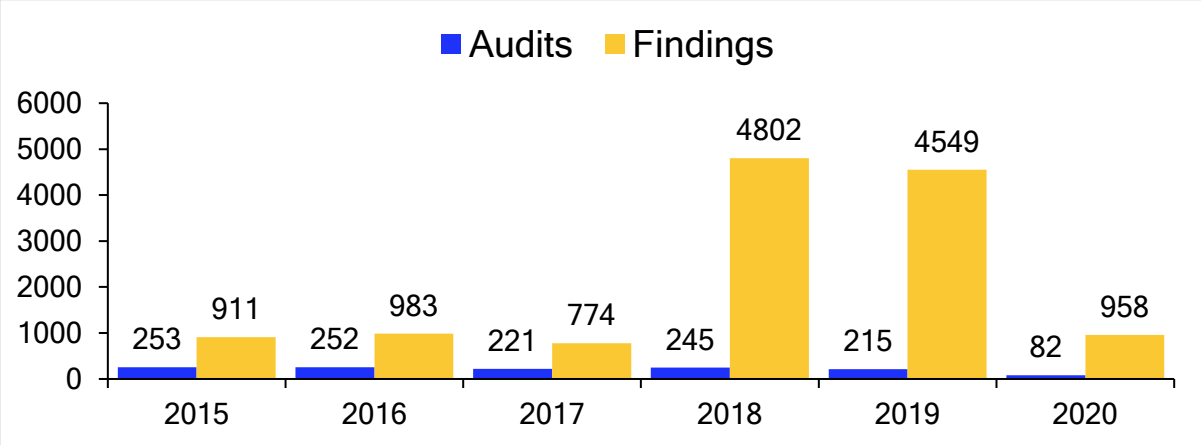
Currently there are over **220 Ground Service providers** (GSPs) are ISAGO-registered. There are **354 ISAGO-accredited stations at 230 airports worldwide**

More than 500 ISAGO audit reports are available in the ISAGO Registry platform, accessible to airlines through the ISAGO membership program. Airlines may use these ISAGO reports in lieu of and to satisfy their oversight obligations of outsourced ground handling operations and provide input to their SMS. ISAGO accepted as means of conformity in IOSA for oversight of outsourced ground operations by many regulators.

IATA has Introduced a reduced scope remote ISAGO Audit option while the full scope on-site audit option remains available. The airline would have the choice between two or options: In option one, the airline can renew an existing registration through a **remotely conducted audit** that has a reduced checklist. A remote audit would have a registration validity of 12 months due to the reduced scope. In option two, the airline can choose to renew the registration through a full onsite audit. This will give the operator a 24 months registration renewal.

3.5.2.1 Audit Result Analysis (Global)

The total audits performed in 2020 are **103 of which 50% remote audits**, with an average of 12 findings raised per audit as shown in graph 35 below.



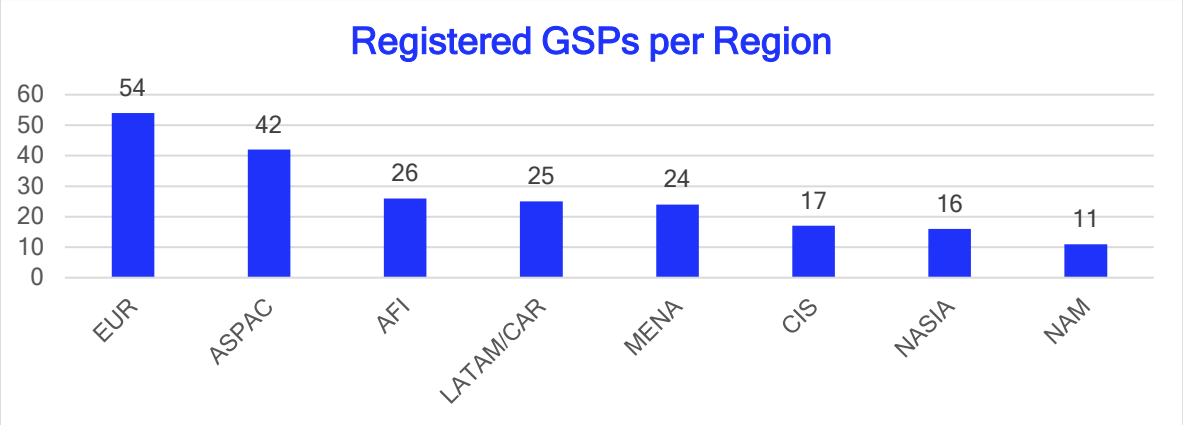
Graph 35: IATA Audit Result Analysis

3.5.2.2 Audit Result Analysis per Region

In MENA a total of 12 audits performed with an average of 3.42 findings raised per audit.

GOSARP Code	Finding (#)	GOSARP Subject
ORM 1.1.3	35	SMS – Umbrella GOSARP conformity dependent on conformity of all ORM SMS
ORM 1.3.4	24	Safety risk assessment and mitigation program
ORM 1.3.11	22	Safety assurance program including detailed audit planning and sufficient resources
ORM 3.1.1	17	Management and control of internal and external documentation
ORM 4.3.1	17	Training program - ensures personnel involved in SMS related activities are trained .
ORM 1.4.3	15	Process to set performance objectives and measures for operational safety performance of the organization
ORM 1.3.8	14	Closure of internal findings raised from QA program and station QC program
LOD 2.4.1	12	Managing discrepancies of weight and balance figures for a flight
LOD 3.1.2	12	Accessibility of operational document at all stations with load control operations
ORM 1.3.5	11	In case of an accident/incident, safety investigation and reporting of events

In MID region there are **24 GSEs** are ISAGO-Registered operating at 38 stations in 19 Airports as shown in Graph 36.



Graph 36: IATA Audit Result Analysis per region

3.6 Region Safety Performance - Safety Indicators-Proactive/Predictive

3.6.1 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**	**76%**	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

3.6.2 Goal 3: Ensure Appropriate Infrastructure is available to Support Safe Operations

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

3.6.3 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.	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**	6 out of 10 States (60%)	
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**	6 states out of 10 signed ISAGO MOU 60%	

Table11: Goal 4

3.6.4 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	**76.1%**	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	
Number of States that have published a national aviation safety plan	13 States	TBD	

Table 12: Goal 5

3.6.5 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	**15 States**	Target achieved
Number of States providing required data related to accidents, serious incidents and incidents to the MID-ASRG	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 3 States	
	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 safety risk portfolio were considered for identifying the regional operational risks . Table14 shows that each identified safety issue is mapped to its respective potential accident outcome (s), and the safety risk Portfolio 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		
Adverse Convective weather	Catastrophic	x	x			x	x	
Un-stabilized Approach	Catastrophic		x			x		x
Flight planning and preparation	Catastrophic	x	x	x	x	x		
Crew Resource Management	Catastrophic	x	x	x	x	x		

		Potential Accident Outcome						
Safety Issues	**Accident Severity**	**CFIT**	**LOC-I**	**MAC**	**GCOL**	**RE/ARC**	**Injury Damage inflight**	**Injury Damage on Ground**
Handling of technical failure	Catastrophic	x	x		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				
Inappropriate flight control inputs	Catastrophic		x			x		
Contained engine Failure/Power Plant Malfunctions	Catastrophic		x			x	x	
Birdstrike/Engine Bird ingestion	Catastrophic		x			x		
Fire/Smoke-non impact	Catastrophic		x				x	
Wake Vortex	Catastrophic		x				x	
Deviation from pitch or roll attitude	Catastrophic	x	x			x		
Flight crew Fatigue	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	
Contaminated runway/Poor braking action	Major					x		x
Clear Air Turbulence (CAT) and Montain Waves	Catastrophic		x				x	

Table 14: Safety Risk Portfolio

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). It is also to be noted that for the Abrupt Manoeuver (AMAN) occurrence category, the flightcrew received TCAS RA and applied high rate of climb according to the TCAS display to prevent Mid air collision with military aircraft which caused injuries to some persons on board. Therefore, the MAC occurrence category was also considered as a HRC. Considering also the reactive and proactive safety information, safety issues 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 safety risk portfolio. 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 2016-2020.

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. Mid-Air Collision (MAC);
3. Controlled Flight into Terrain (CFIT); and
5. Runway incursion (RI).

In addition to this, main safety issues have been identified and mapped to their respective 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 2016-2020 aircraft upset, 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 2016-2020, Runway Excursions and abnormal runway contact accidents and serious incidents mainly occurred in the landing phase of flight. In addition, High Airspeed and Low Engine Thrust identified as key contributing factors to the Unstable Approaches Events.

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. During 2020, no mid-air collision accident has been recorded. However, the flightcrew received TCAS RA and applied high rate of climb according to the TCAS display to prevent Mid air collision with military aircraft which caused injuries to some persons on board. In addition, this key risk area has been raised by some MID States specifically in the context of the collision risk posed by military aircraft operating in Gulf area over the high seas which are not subject to any coordination with related FIRs for airborne operation. This is one specific safety issue that is the main priority in this key risk area. However, additional safety data and safety information are 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 safety data and safety information are 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 safety data and safety information 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 76 %, which is above the world average 68.68 % (as of 24 May 2021). Three (3) States are currently below EI 60%.

All eight areas have an EI above 60%. However, the areas of AIG and ANS still need more improvement. Regarding the Critical Elements (CEs), CE4 (Qualified technical personnel) improved and is above 60% (62.39%) 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, 1%.

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 implementation 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.

4.2.3 Human Factors and Competence of Personnel

As new technologies emerge on the market and the complexity of the system continues increasing, it is of key importance to have the right competencies and adapt training methods to cope with new

challenges. CRM has been identified as most important human factors issue in the domain of commercial air transport and safety actions would be identified and developed.

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

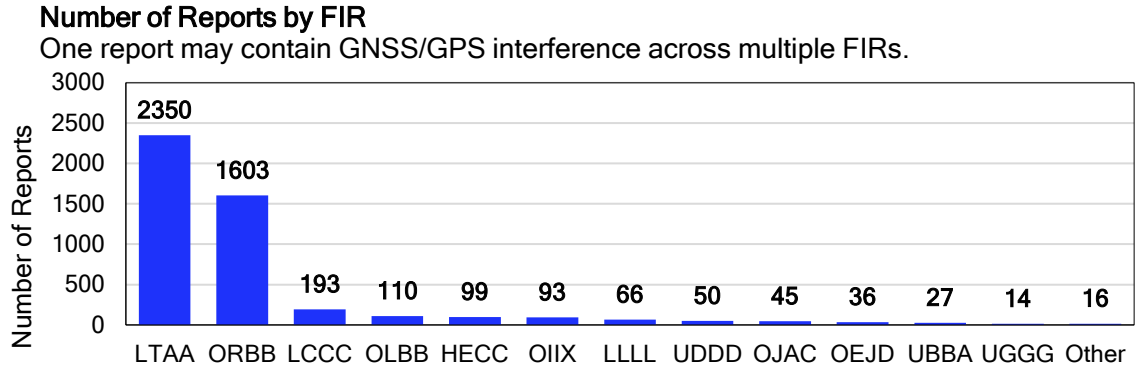
IATA Incident Exchange Database (IDX):

GNSS/GPS vulnerability, including intentional and unintentional signal interference, has been identified as a major safety issue as GNSS is embedded in numerous critical infrastructures. The intentional interference presents a substantial safety threat to aircraft and passengers. In addition to safety risk, when GNSS/GPS interference occurs in airspace with a major traffic footprint, this may also considerably degrade airspace utilization. Therefore, such interference needs to be monitored and its operational risk assessed.

The recent data analysis indicates the notable presence of on-going risk of GNSS/GPS Interference in Middle East region.

Data Analysis Finding:

A total of 3,373 Aviation Safety Reports which were collected in MID Region from IATA Incident Exchange Database (IDX), were analyzed to capture GNSS/GPS Interference reports from January 2019 to December 2020. The majority of GNSS/GPS interference was reported in LTAA (Ankara FIR), ORBB (Baghdad FIR) and their respective borders, which sum up to 83.8% of total reports, followed by LCCC (Nicosia FIR) and OLBB (Beirut FIR).



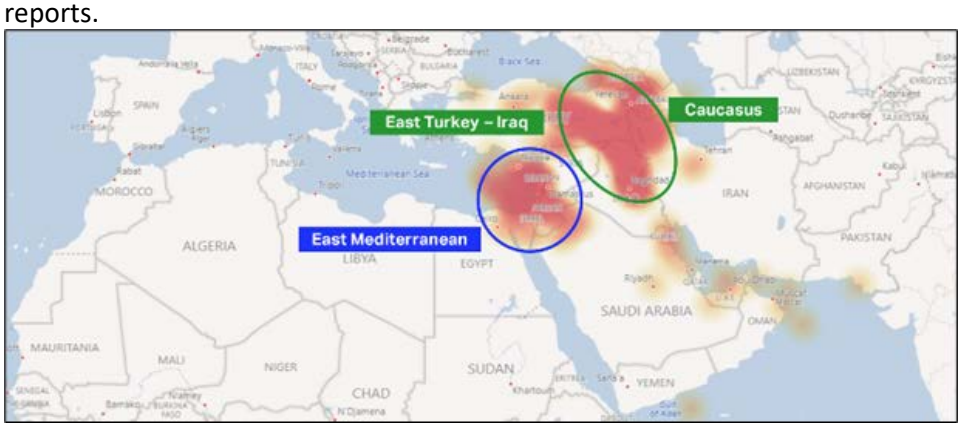
Graph 37: Location of Reported GNSS/GPS Interference

By analyzing reported waypoints and coordinates, two major clusters were identified:

- Eastern Turkish airspace to Iraq, Iran and Armenia (extended to the border between Armenia and Azerbaijan).
- Eastern Mediterranean airspace to Cyprus, Egypt, Lebanon and Israel (extended to a corridor between Israel and Jordan

- Of the GNSS/GPS interference reports near Eastern Turkish airspace, 99.8% were reported during cruise. Most of the reported waypoints were distributed near FIR borders, especially between Turkey (LTAA) and Iraq (ORBB). Numerous reports were concentrated over air route UM680 (Iraq to Turkey) and UM688 (Turkey to Iraq).

• Of the GNSS/GPS interference reports near Eastern Mediterranean airspace, 64.6% were reported during approach, descent or climb. By contrast, flights on cruise represented only 29.2% of total reports.



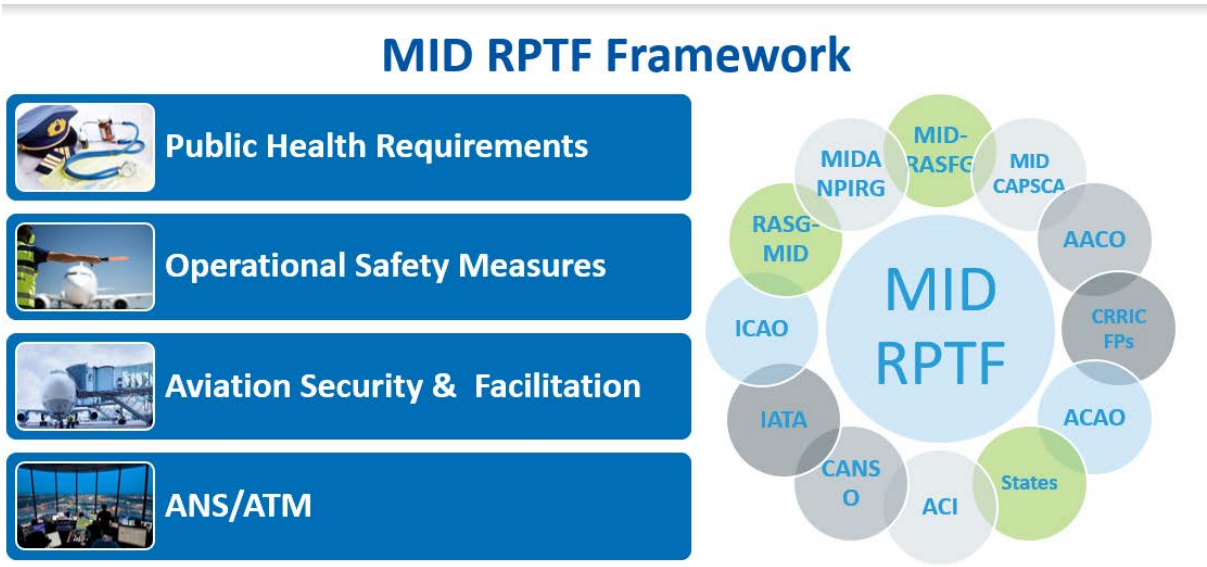
Most of the reports were distributed near airports, such as Lebanon-OLBA (20.5%), Cyprus-LLCK (10.9%), Israel-LLBG (10.9%), Jordan-OJAI (6.5%) and Egypt-HECA (2.8%). However, some reports were collected at the border between Nicosia FIR (LCCC) and Cairo FIR (HECC).

Recommendations:
To address the on-going risk of GNSS/GPS Interference in the Middle East Region:

1. States and ANSP to proactively identify the GNSS/GPS interference and promptly notify airspace users with advisories, safety bulletin and NOTAMs.
2. States and ANSP to analyze the risk level of harmful interference to GNSS and establish contingency procedures and infrastructure as appropriate.
3. Airlines to monitor the NOTAMs and advisories and brief crews to be aware of potential GNSS/GPS interference, its impact and contingency procedures during GNSS capability loss; and
4. Airlines to encourage active reporting of GNSS/GPS interference to relevant national authorities and IATA.

4.3.2 COVID-19 Pandemic Outbreak

The impact of the coronavirus disease (COVID-19) pandemic on global air transport is without precedent. 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 virtual Meeting between ICAO, AACO, ACAO and IATA on COVID-19 Crisis Management came out with proposal to establish a MID Region Recovery Plan Task Force (MID RPTF) which was then endorsed by the Middle East DGCA virtual Meeting held on 23 April 2020.



Graph 38: MID RPTF Composition and Framework

The MID-RPTF would serve as a platform for coordination and cooperation amongst all stakeholders to support States for the recovery plan of the aviation industry in Middle East during COVID-19 pandemic period and at the same time prepare for the post COVID-19 recovery phase. It will also ensure that there is no duplication of efforts with associated Regional Groups.
The MID RPTF Term Of reference (TORs) has been updated and endorsed by the 4th Virtual DGCA meeting.

The MID RPTF framework was established to include 4 technical work streams namely: Public Health Requirements, Operational Safety Measures, Avaition security and Facilitation, and Air Navigation Services/Air Traffic Management. Each work stream identifies its key activities and their respective actions and deliverables/outcomes to be presented to the MID TPTF meetings.

The MID RPTF composition includes the Chairpersons of MIDANPIRG, RASG-MID, MID-RASFG and CAPSCA-MID; States representatives; States CRRIC Focal points; Representatives from the Regional and International Organizations (AACO, ACAO, ACI, CANSO, IATA, ICAO, IFALPA, and IFATCA); and Operators, and/or Service Providers may be invited to participate in the MID RPTF meetings, as required.

The mian key activities of the MID RPTF

- Continuous sharing, communication and promotion of developed guidance material and Best practices with MID States and stakeholders on operational safety measures, CAPSCA, security and facilitation, and ATM aspects
- Continuous support to States on the use of TE system in line with Recommendation 12 (revised) by providing guidance and continuous coordination and communication
- Continuous support to States on the implementation of the CAPSCA Programme
- Encourage States to make use of industry guidance on vaccine transportation
- Encourage States to report any deficiencies in the implementation of ICAO CART recommendations 15 and 16
- Encourage States to continue advocating and communicating the CART III Recommendations and guidance for States Administration in the decision-making process
- Continuous sharing, communication and promotion of developed guidance material and Best practices with MID States and stakeholders on operational safety measures, CAPSCA, security and facilitation, and ATM aspects

- Provide the necessary support and assistance to concerned States on Air Navigation Service Providers and Airspace Users.
- Monitor and support the implementation by States in the provision of harmonized, accurate, current and timely aeronautical information publications
- Facilitate through a Collaborative approach with States, ANSPs, and Airspace Users to evaluate ATFM restrictions with the goal to alleviate none essential ATFM Restrictions
- Monitor and Support the implementation by States of efficient Overflight Permission Processes to ensure Facilitation, Flexibility, and/or Relief of overflight permit issuance and charging schemes.

From the onset of the coronavirus disease 2019 (COVID-19) crisis, the aviation system has faced ever-growing challenges. The International Civil Aviation Organization (ICAO), through the Council Aviation Recovery Task Force (CART), has resolved to partner with its Member States, international and regional organizations, and industry to address these challenges and to provide global guidance for a safe, secure and sustainable restart and recovery of the aviation sector. The ICAO CART developed and issued CART I, CART II, and CART III Report and the associated "Take-Off Guidance Document" (TOGD).

Graph 39: MID CART Implemnttaion Plan

The MID-RPTF contributed to the development and would also continue to foster and support the implementation of MID CART implementation plan and associated MID Regional Groups CART implementation plans of actions.

The MID CART Implementation Plan, which was endorsed by the Third DGCA-MID Virtual Meeting (7 December 2020), is developed in line with and in support of the Global Implementation Roadmap (GIR) to contribute to the restart and recovery of the civil aviation system by establishing and enabling a framework for an effective implementation of the recommendations and guidance outlined in the CART Report and the associated "Take-Off Guidance Document" (TOGD).

The MID CART implementation Plan is developed based on the following main 3 pillars namely Communication, Coordination and Collaboration; Implementation Support; and Monitoring and Reporting.

The MID CART Implementation Plan addresses all areas covered in the CART Report by following the key principles and the guiding considerations outlined in the TOGD, in particular the principle of 'working as one aviation team'. In support to the GIR, the MID Region initiatives will be compiled on the online interactive roadmap accessible through the COVID-19 Response and Recovery Implementation Centre (CRRIC).

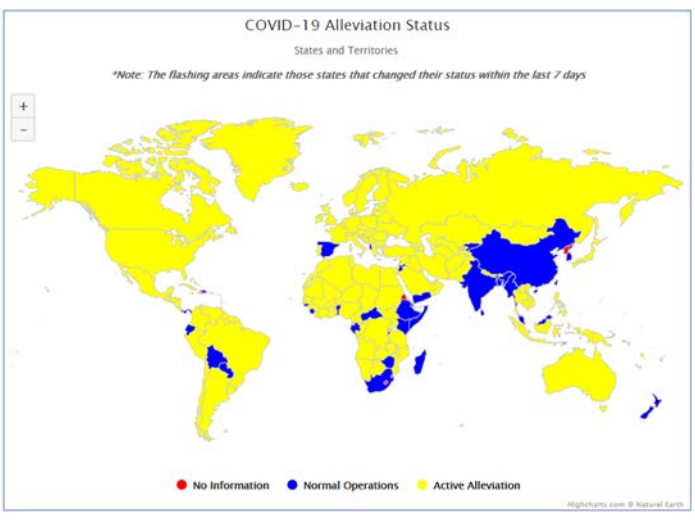
COVID-19 Operational Measures Website

On 11 March 2020, the World Health Organization (WHO) declared the rapidly spreading coronavirus (COVID-19) outbreak a global pandemic. This led to the adoption of social distancing practices and other preventive measures, which have impacted air traffic and the global air transport system at large. In order to facilitate safe operations, States took various actions that would enable service providers and air transport essential personnel to maintain the validity of their certificates, licenses and other professional accreditations and approvals during the pandemic.

To ensure rapid, accurate and standardized information in support of States' efforts to minimize the spread of COVID-19 by air transport and to protect the health of air travellers and aviation personnel while maintaining essential air transport operations, ICAO established the COVID-19 Safety Operational Measures website (https://www.icao.int/safety/OPS/Pages/default.aspx).

The website enabled States to inform ICAO of any temporary differences determined by the State's COVID-19 contingency measures, particularly those related to licensing and certification and about their recognition/acceptance of the validity of certificates and licenses affected by the special temporary measures of other States. The tool developed to support the notification and dissemination of temporary differences during this period known was the COVID-19 Contingency-Related Differences (CCRDs) sub-system of the Electronic Filing of Differences (EFOD) system. It includes dashboards and graphical interfaces presenting the global, regional or local status of alleviations.

CCRD entries could be submitted through the EFOD (www.icao.int/usoap) dashboard, or via an offline CCRD form available for download on the website. At any moment, stakeholders could access the dashboards showing real-time participation or the status of their State's operations.



Red: States did not respond to the request to submit information/alleviations

Yellow: States that have at least one active alleviation

Blue: States that have no active alleviations and have resumed normal operations

Graph 40. COVID-19 alleviation status on 29 March 2021

In order to achieve the required level of accuracy and standardization of State responses, Quick Reference Guides (QRGs) and additional guidance addressing the establishment of the alleviations were developed by ICAO, with the support of relevant subject matter experts.

The COVID-19 CCRDs sub-system was established to support alleviations as interim measures to continued operations. The alleviation of these interim measures cannot sustain safe operations indefinitely and a return to normal operations (albeit a "new" normal) is anticipated and for that reason the CART recommended (Recommendation 12) that "Member States should plan to put in place the necessary measures to mitigate risks associated with prolonged regulatory alleviations, and to avoid extending alleviations (both core and extended COVID-19 Contingency Related Differences (CCRDs)) beyond 31 March 2021."

4.3.3 Ensure the Safe Operations of UAS (drones)

The number of drones at the global level has increased. Available evidence demonstrates an increase of drones coming into close proximity with manned aviation (both aeroplanes and helicopters) and the need to mitigate the associated risk. The civil aviation authority is responsible for, inter alia, ensuring aviation safety and protecting the public from aviation hazards. However, additional safety data and safety information are needed for further analysis to identify the underlying safety issues.

4.3.4 Impact of Security on Safety

The crash of flight MH17 immediately raised the question why the aero plane was flying over an area where there was an ongoing armed conflict. Similar events had occurred in the MID region. Thus, military or terrorist conflicts may occur in any State at any time and pose risks to civil aviation. This is why it's important for governments, aircraft operators, and other airspace users such as air navigation service providers (ANSPs), to work together to share the most up-to-date conflict zone risk-based information possible to assure the safety of civilian flights. Similar events had occurred in the MID region on Jan 2020 involving the Ukraine International Airlines flight PS752.

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 2016 - 2020, 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. Mid-Air Collision (MAC)
4. Controlled Flight Into Terrain- (CFIT); and
5. Runway incursion (RI).

B. Organizational issues:

1. States' Safety Oversight capabilities;
2. Safety Management; and
3. Human factors and competence of personnel.

C. Emerging Safety risks

1. GNSS outage;
2. COVID-19 Pandemic outbreak;
3. Ensure the safe operations of UAS (drones); and
4. Impact of security on safety.

The Middle East Regional Aviation Safety Plan (MID-RASP) 2020-2022 Edition considers and supports the objectives and priorities of GASP 2020-2022 Edition. MID-RASP also emphasizes the importance of identifying and mitigating risks at MID region level. In addition, MID-RASP is to create a common

focus on regional aviation safety issues as a continuation of the MID region work to improve aviation safety and to comply with ICAO standards and supports MID States and industry in implementing the GASP 2020-2022 Edition.

The Eighth meeting of the Regional Aviation Safety Group – Middle East (RASG-MID/8) was held in Cairo, Egypt, Virtual Meetings, 15-22 February 2021; reviewed and endorsed the MID-RASP 2020-2022 Edition including the SEIs list and their respective actions through **RASG-MID CONCLUSION 8/3.**

Therefore, to address organizational challenges/issues, regional operational risks, and emerging risks, 17 SEIs and 50 safety actions have been included in the MID-RASP. The list reflecting the status and progress made for each SEI and its respective action(s) is at **Appendix B.**

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

Appendix B: Safety Actions- Consolidated List of SEIs with their respective Actions

SEI Code	SEI name	Actions	Owner(s)	Status/Progress	Completion Date
Organizational Challenges and Emerging Risks					
Goal 2: Strengthen States' Safety Oversight Capabilities					
G2-SEI-01:	Strengthening of States' Safety Oversight Capabilities	**A1**- Conduct Capacity Building Activities (Workshops, Training, Webinars, GSI Courses) to promote effective implementation of SARPs, with a focus on the following technical areas: ANS, AGA, and OPS	ICAO	USOAP-CMA webinar conducted on 11 Feb 2021	2022
		A2- Conduct technical assistance and NCLB missions to States	ICAO		2022
		A3- Develop and implement a specific NCLB plan of actions	ICAO and concerned States		2022

G2-SEI-02:	Improve Regional Cooperation for the Provision of Accident & Incident Investigation	**A1**- Development and signature of the MOU among MENA ARCM States	ICAO, ACAO, and States (TBD)	ARCM MOU Draft circulated to the States for their comments. The consolidated ARCM MOU Draft will be reviewed by the AIIG/1 meeting 7 Sep 2021 and to be presented to the DGCA-MID/6 for endorsement	2022
		A2- Conduct AIG Capacity Building Activities	ICAO and ACAO		2022
G2-SEI-03:	Sharing of Safety Recommendations related to Accidents and Serious Incidents	**A1**- Development of questionnaire to be circulated to MENA States on sharing safety recommendations on dedicated platform	ICAO, ACAO, and States (KSA & UAE)	Questionnaire Draft will be reviewed by the AIIG/1 meeting on 7 Sep 2021.	2021
G2-SEI-04:	Enhance State Oversight on Dangerous Goods	**A1**- Dangerous Goods (DG)workshop for States 'inspectors	ICAO and ACAO. Supported by FAA	Dangerous Goods Workshop planned to be held in Casa Blanca during 6-8 Nov 2021	2021
		A2- Develop guidance material/share best practices to support States' inspectors for the conduct of the oversight for DG	States (TBD)	ICAO MID Office to issue a State Letter requesting voluntary States to provide support on the safety action	2022
		A3- Develop guidance material and providing webinar on Lithium batteries	IATA		2022
		A4: Organize DG capacity building training	ICAO		2022

G2-SEI-05:	Human factors and Competence of Personnel	**A1**- Advisory Circular: Crew Resource Management Training Programme (CRM). **(Action addressed under G1-SEI-04:CFIT)**	IATA		2022
		A2- Organize Crew Resource Management Training workshop to share experience and best practices on CRM practical implementation	ICAO and ACAO. Supported by IATA and KSA. KSA: presentation/case study to be delivered by a subject matter expert (HF Investigator). FAA to be confirmed		2022
		A3- Conduct workshop/webinar on fatigue risk management and mental Health best practices	IATA and ACAO. Supported by CANSO, IFALPA, Jordan, and KSA.		2022
		A4- Organize Team Resource Management Training workshop to share experience and best practices on TRM practical implementation	ICAO, ACAO, IATA, CANSO, FAA, and States (TBD	Organize a coordination virtual meeting involving all stakeholders during the month of June or July 2021 to agree on the TRM activities and come out with the tentative plan	2022

G2-SEI-06:	Impact of security on safety	**A1-** Circulate ICAO Doc 10084 Risk Assessment Manual for Civil Aircraft Operations Over or Near Conflict Zones	ICAO	To be circulated during 2021	2021
		A2- Organize seminar/Symposium to exchange experiences and good practices on assessing the risks and sharing of information related to the overflying of conflict zones in coordination with RASFG-MID and MIDANPIRG	ICAO and ACAO. Supported by IATA, CANSO, States (TBD)	Follow up with MID Office Aviation security and facilitation	2022
		A3- Encourage States to issue NOTAMs to share threats information emanated from conflict zones within their airspaces	ICAO	Maintained as planned	2021
Goal 3: Ensure the Appropriate Infrastructure is available to Support Safe Operations					
G3-SEI-01:	Certification of International Aerodromes	**A1-** Support States on the implementation of the ICAO Annex 14 requirements to achieve compliance with regards to Aerodrome Design and Operations, through Workshops/Training	ICAO and ACI. Supported by ACAO	Training course conducted on implementing Annex 14, during period of 8-12 Nov2020	2022
		A2- Enhance capacity building for States CAAs and Airport operators related to aerodromes certification through Workshops/Training	ICAO and ACI		2022
		A3- Develop guidance material/ share best practices on Apron Management	States (UAE and Egypt)	Maintained as planned. Q4 2021	2021

		A4 – Deployment of iPack on Aerodrome Re-Start	ICAO	Maintained as planned	2021
G3-SEI-02:	Establish Runway Safety Team (RST) at International Aerodromes	**A1-** Conduct of assistance missions by the Runway Safety Go-Team (RST)	ICAO. Supported RSP (Runway Safety Programme Partners)		2022
		A2: Support States to implement the Global Reporting Format Methodology through workshops/trainings**: (Action addressed under G1-SEI-02: Runway Excursion)**	ICAO and ACI. Supported by CANSO, IATA, FAA and Aircraft Manufactures	1.Webinar has been conducted on 27 Oct 20 2.ACI webinar on Implementing GRF at airports with non-winter conditions; dated 27 May 2021	2022
Goal 4: Expand the Use of Industry Programmes					
G4-SEI-01:	Promote the Use of industry Programmes	**A1-** Encourage IATA's IOSA and ISAGO registrations through safety promotion	IATA		2022
		A2- Encourage the implementation of ACI Airport Excellence (APEX) in Safety Programme	ICAO and ACI		2022

Goal 5: Implementation of Effective SSPs and SMSs					
G5-SEI-01:	Implement an effective Safety Management	**A1-** Conduct SSP training course in Cairo	ICAO	SSP course planned for 26 Oct- 1 Nov 2021	2021
		A2- Conduct SSP Workshop in coordination with ACAO in Casablanca, Morocco	ICAO and ACAO	-Postponed due to COVID-19 -An Event Risk Assessment webinar delivered on 7 June 2021organised by ICAO MID Office	2021
		A3- Provide SSP/SMS workshops for MID States personnel	ICAO. Supported by IATA, CANSO, ACI, and States (UAE)	SSP workshop conducted in Kuwait in March 20	2022
		A4- Develop guidance material/share best practices on occurrence reporting for the CAA personnel on establishing an effective operation of the mandatory and voluntary reporting systems	States (UAE)	Guidance material structure has been drafted and an update to be presented to the SEIG/3 meeting	2022
		A5- Support and guide States in the development of NASPs through workshops and sharing of best practices	ICAO and States (UAE)	1. ICAO organizing series of RASP webinars. - MID-RASP Webinar conducted by ICAO on 25 May 2021	2022

				2. ICAO organized series of Webinars related to GASP/NASP: - 16 March 2021: ICAO's Global Safety Strategy: the Global Aviation Safety Plan. - 30 March 2021: Introduction to the National Aviation Safety Plan - 13 April 2021: Using the Roadmap to Develop a National Aviation Safety Plan	
		A6- Development of guidance/share best practices for the processes and procedures for oversight of SMS	States (UAE)	Guidance material structure has been drafted and an update to be presented to the SEIG/3 meeting	2022
		A7- Deployment of the Aviation Safety Risk Management iPack	ICAO	Completion of ASRM iPACK related to COVID-19 project with PACA Oman and conducted the closing meeting on 4 May 2021. Planned to be delivered during the year 2021	2020
		A-8- Conduct assistance missions by SMIT to support States with SSP implementation	SMIT. Egypt, Saudi Arabia, Qatar and UAE. Supported by CANSO and IATA	SMIT Handbook is being drafted and to be shared with SEIG/3 for review.	2022

Goal 6: Increase Collaboration at the Regional Level to Enhance Safety					
	To be developed in the future				
Regional Operational Safety Risks					
Goal 1: Achieve a continuous reduction in Operational Risks					
G1-SEI-01:	Aircraft upset in flight (LOC-I)	**A1-** Guidance material on flight crew proficiency	IATA and Aircraft manufacturers		2022
		A2- Advisory Circular: Mode Awareness and Energy State Management Aspects of Flight Deck Automation	IATA and Aircraft manufacturers. Supported by KSA		2022
		A3- Conduct Upset Recovery Workshop	ACAO, IATA, and ICAO. Supported by FAA to be co firmed. Host State to be confirmed	ICAO, KSA, and FAA UPRT Feb 20	2022
		A4- Develop guidance material/share best practices on Ground Handling Service Provider Certification Process	IATA and KSA	Maintained as planned. Q4 2021	2021
		A5- Conduct a Ground Handling workshop	ACAO and ICAO. Supported by IATA	Maintained as planned. Q4 2021	2021

G1-SEI-02:	Runway Safety- Runway Excursion	**A1-** Support States to implement the Global Reporting Format (GRF) Methodology through Webinar/ Workshops/Training	ICAO and ACI. Supported by CANSO, IATA, FAA and Aircraft Manufactures	Maintained as planned (Q4 2021)	2021
		A2- Guidance material on un-Stabilized Approach	IATA. Supported by CANSO and IFALPA		2022
		A3- MID Region Action Plan/Milestones on the Global Reporting Format (GRF) Implementation	ICAO	Maintained as planned (Q4 2021)	2021
G1-SEI-03:	Runway Safety- Runway Incursion	**A1-** Support States to implement aerodrome inspection through workshops/trainings/Webinars	ICAO. Supported by FAA and UAE		2022

G1-SEI-4:	Controlled Flight into Terrain (CFIT)	**A1-** Advisory Circular: Guidance for Operators to Ensure Effectiveness of GPWS Equipment	IATA and Aircraft manufacturers		2022
		A2- Advisory Circular: Instrument Approach Procedures Using Continuous Descent Final Approach Techniques	IATA and Aircraft manufacturers		2022
		A3- Circulate ICAO Guidance Doc 10000 on Flight Data Analysis Programme (FDAP) to support States providing oversight to air operators	ICAO	ICAO Guidance Doc 10000 to be circulated during 2021. Waiting ICAO to issue the final amended one.	2022
		A4- Advisory Circular: Crew Resource Management Training Programme (CRM)	IATA, Aircraft manufacturers		2022
G1-SEI-05A:	Loss of separation between civil and military aircraft"	**A1-** States and regional organizations to share occurrences and/or safety analysis/information related to Near Mid Air Collisions (NMACs) including to the "Loss of separation between civil and military aircraft" and ATM-SG to perform a technical analysis of the reported occurrences and and/or safety analysis/information and then come out with recommendations. The technical analysis of the reported occurrences and recommendations be shared with ASRG.	ICAO. Supported by IATA, CANSO, and States	CANSO and IATA to provide the safety information and safety analysis	2022

		A2: Guidance/raising awareness/ coordination related to the civil and military cooperation in particular over high seas	ACAO and ICAO. Supported by States	Action Group was established, composed from experts from MID States (Bahrain, Egypt, Iraq Jordan, Oman, Qatar, Saudi Arabia, UAE) to review ICAO Doc 10088; and if necessary, to draft a supplementary regional guidance material.	2022
G1-SEI-05B:	Ensure the Safe Operations of UAS (drones)	**A1**- Circulate ICAO developed guidance and advisory circulars: Regulatory framework for the operation of drones to support states' CAA personnel in the implementation and oversight of UAS operations	ICAO	To be circulated on May 2021	2021
		A2- Organize symposium on Drones related subjects	ICAO, ACAO. Supported FAA	Planned to be held in Casa Blanca during 15-17 Dec 2021	2021
		A3- States and regional organizations to share occurrences and/or safety analysis/information involving drones to ASRG to perform a technical analysis of the reported occurrences and come out with recommendations.	ICAO, IATA, ACI, CANSO, and States (TBD)	IATA to provide safety information and safety analysis	2022

-END-

CREDITS

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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