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OUTCOMES FROM THE GLOBAL SAFETY ASSESSMENT PROJECT

(Presented by Argentina, Chile, Costa Rica, Dominican Republic, Panama, Singapore and the Flight Safety Foundation)

EXECUTIVE SUMMARY

This working paper presents information on the work carried out by Flight Safety Foundation (FSF) in collaboration with airline associations on a Global Safety Assessment Project to help the Foundation and its members to understand current global and regional safety needs by identifying synergies and gaps in addressing existing safety risks and emerging safety issues arising from the COVID-19 pandemic. The information collected helped to determine the impact the pandemic has had on governments supporting their industry as well as on the industry keeping pace with its international obligations and national requirements.

Action: The Assembly is invited to:

a) Request ICAO to review the summary of the results reflected in Appendix A and develop further guidance to States on the implementation of a state safety program (SSP) framework and to consider the actual SSP maturity levels in States when revisiting the Global Aviation Safety Plan (GASP) goal and targets related to SSP implementation in the GASP 2026-2029.

b) Encourage States to review the summary of results contained in Appendix A to this paper and consider developing further guidance to support its industry, based on lessons learned and best practices for establishing safety management systems (SMS) in a more simplified or scalable approach to cater to smaller operators.

c) Encourage States and ICAO to continue to place greater emphasis on promotion, education and awareness of the mental health of aviation personnel.

Strategic Objectives:	This working paper relates to the Safety Strategic Objective.
Financial implications:	Not applicable.
References:	HLCC 2021-WP/208, Regional Aviation Safety Assessment Project, Middle East Region; Regional Safety Assessment Project, Asia and Pacific Region; Regional Aviation Safety Assessment Project, Western and Central African and Eastern and Southern African Regions; Regional Aviation Safety Assessment Project, South American, North American, Central American and Caribbean Regions.

1. INTRODUCTION

1.1 In 2021, the Flight Safety Foundation (FSF) launched a Global Safety Assessment Project to help the Foundation and its members to understand current global and regional safety needs by identifying synergies and gaps in addressing existing safety risks and emerging safety issues arising from the global pandemic. The assessment focused on scheduled commercial air transport, business aviation and special operations.

1.2 Developed in collaboration with regulators, regional groups and industry associations, the assessment focussed on six ICAO regions: South American (SAM); North American, Central American and Caribbean (NACC); Asia and Pacific (APAC); Middle East (MID); Eastern and Southern African (ESAF); and Western and Central African (WACAF). Traditional safety information such as accident, serious incident and occurrence data, and data on the number of exemptions, extensions and alleviations issued were collected in the early months. A deeper analysis was performed on the ability of regulators to issue exemptions and of service providers to perform thorough risk assessments to make informed decisions. The information helped to determine the impact the pandemic has had on governments supporting the industry as well as on the industry keeping pace with its international obligations and national requirements.

2. THE GLOBAL SAFETY ASSESSMENT PROJECT

2.1 In collaboration with airline associations around the world, specifically the Latin American and Caribbean Air Transport Association (ALTA), African Airlines Association (AFRAA), Association of Asia Pacific Airlines (AAPA) and the Arab Air Carriers Organization (AACO), a comprehensive survey was sent to their members as well as to the FSF Basic Aviation Risk Standard (BARS) Program members in order to collect information on the level of risk assessments performed and the mitigation strategies that may have been put in place during this pandemic. Over 185 airlines/air operators around the world participated in the survey. Information has been collected through surveys, and qualitative results have been reviewed through focus groups and workshops. Virtual workshops were then held in each of the regions, with support from airline associations to perform a deeper analysis of the survey results and exchange best practices and lessons learned. A total of 307 participants from airlines, manufacturers, regulators and international organizations participated in the workshops.

2.2 The responses to the survey, together with other information collected, provided the Foundation with information on the level of risk assessments performed by airlines, including mitigation strategies put in place and an indication of safety management systems (SMS) implementation at a regional level. The information collected also provided — from a regional perspective — an indication of a regulator’s level of implementation of a state safety programme (SSP).

2.3 The survey results, together with the FSF analysis, addressed the following areas:

a) Business continuity plans (BCP) and emergency response plans (ERP);

b) SMS and risk assessment processes;

c) ability to monitor and detect hazards and perform a risk analysis;

d) change management process;

e) civil aviation authority (CAA) and industry cooperation; and,

f) human factors and crew resource management and mental health.

3. SUMMARY OF RESULTS

3.1 The detailed results by region were shared with each airline association that partnered with the Foundation and can be found at the following links. (Africa Regions; Asia and Pacific Region; Middle East Region; the Americas Regions). A summary of the results reflected as key outcomes and key takeaways for each of the areas listed in paragraph 2.3 are found in the appendix to this paper.

4. CONCLUSION

4.1 States are encouraged to review the summary of results and consider developing further guidance to support their aviation industry based on lessons learned and best practices, in particular, establishing SMS in a more simplified or scalable approach to cater to smaller operators.

4.2 ICAO is encouraged to review the summary of the results reflected in Appendix A, in particular, the key takeaways, and to develop further guidance for States on the implementation of an SSP framework and to consider the actual SSP maturity levels in States when revisiting the GASP goal and targets related to SSP implementation in the GASP 2026-2029.

4.3 Subject to this work, the FSF encourages ICAO, through for example, the Safety Management Panel, to develop targeted guidance and educational material for States with smaller aviation systems seeking to implement a SSP, with the worthy intent of improving global, regional and national safety standards.

4.4 The aviation industry, together with governments and ICAO, needs to continuously invest in the well-being, awareness and identification of mental health issues in their respective workforces to ensure that aviation safety is not compromised and that a robust safety reporting culture is instilled in each organization.

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APPENDIX

GLOBAL SAFETY ASSESSMENT SUMMARY OF RESULTS

1.0 The responses to the survey, together with other information collected, provided the Flight Safety Foundation (FSF) with information on the level of risk assessments performed by airlines, including mitigation strategies put in place and an indication of the degree of safety management systems (SMS) implementation worldwide. The information collected also provided — from a regional perspective — an indication of a regulator's level of implementation (maturity) of a state safety program (SSP).

2.0 **Business Continuity and Emergency Response Plans** — Ninety-one per cent of the operators indicated that they had in place an emergency response plan (ERP). This comes as no surprise, considering that there is a requirement for operators to have this in place. Fifty-nine percent of the operators surveyed also had a business continuity plan (BCP), which included, to various degrees, disaster risk management and cybersecurity. Only 65 per cent of the operators indicated that change management and reduction in workforce were included as part of a risk assessment. Thirty-four per cent of the operators that had an ERP as well as a BCP did not have an established link between their ERP decision-making and the BCP. In other words, some decisions may have been made at the top level on reduction of workforce without necessarily involving the necessary safety leadership to provide input on the impact (safety risks) of these decisions.

2.1 **Key Outcomes**:

- Airlines recognized the importance of tying together business continuity and emergency response planning and the need for this to be more formalized.
- Airlines were forced to make sure a proper BCP and framework were functioning throughout an organization. The larger the airline, the more complex it is to ensure the proper functioning of business continuity throughout all departments. Primary focus was placed on how to determine the minimum workforce that would be required during the pandemic. Also examined were the logistics of how different functions of the organization would work with the minimum workforce size and whether they would be sustainable. This confirmed that emergency response work alone must have a BCP in place.
- The pandemic required airlines that had both an ERP and BCP to decide where to address the disruption caused by the pandemic, and in most cases, it was placed under the BCP because the disruption impacted the entire business.
- Some airlines had the advantage of having a BCP established prior to the pandemic, and thus were able to activate it during the pandemic. Relationships between risk managers and safety managers, including their working methods, were strengthened.
- Many airlines have disruption management and ERPs that are based on aircraft accident and incident outcomes. Processes, checklists and work instructions had to be quickly revised to support pandemic and endemic containment intervention actions.
- Restart operations required operators to consider organizational centralized restructuring; consolidated project identification of tasks, functions, timelines, skills and cost in resuming operations; air operator certification, and continuing airworthiness matters; commercial plans (new schedules and marketing plans); training (critical skills gap); an effort not to lose training capability (factoring a staff reduction by 75 percent) and a return-to-work policy (which departments needed to develop for both workers on site and those working remotely).

- At the BCP level, airlines had to address drastic workforce reduction and decide how to determine the minimization of the workforce, coupled with the logistics of how different functions of the organization would work with a minimal workforce and how sustainable this would be.
- Generally, a high percentage of the airlines did not link their ERP decision-making and the BCP.

2.2 **Key Takeaways**:

- It is critical for aviation executives to demonstrate safety leadership and their commitment to a positive safety culture within the organization in order to maintain the fragile balance between safety, operational priorities and financial pressures, and to enable sustainable operations.
- Strong safety leadership in an organization is a prerequisite for a positive safety culture, leading not only to a safer operation, but also to a more efficient and resilient business.
- Any plan in place is only effective if an activation plan is also in place. Once activated, clarity is required to identify who gets involved, as well as the pivotal roles that would go beyond safety and security personnel and constitute a network of entities and personnel that report to the emergency and crisis center.
- Organizations that coped better than others had an ERP or a BCP with a consolidated committee of people focusing on how the business should operate during a crisis. A consolidated committee can take many forms, but it essentially comprises a technical team and a strategic team working hand in hand, ensuring all staff at the appropriate levels are heard and able to speak freely and objectively to ensure effective and safe operations.

3.0 **Safety Management Systems and Risk Assessment Processes —** Ninety-seven per cent of all operators that responded to the survey indicated that they have established an SMS and a hazard identification and safety risk assessment process, and 92 per cent updated their risk assessment due to the pandemic. Sixty per cent of the operators surveyed indicated that they reviewed their risk assessment as required, weekly or monthly. However, 40 per cent did not perform a review or only did so infrequently during the pandemic.

3.1 **Key Outcomes:**

- Evidence-based risk assessments were limited in some of the decision-making processes.
- There was a need for quick implementation of mitigation measures in existing procedures or rapid integration of new procedures.
- There was a need to continually assess risks associated with exposure and delays.
- Operators were challenged with the myriad of changes to national requirements from one state to the next.
- Some operators were required to establish the strictest standards to ensure they would satisfy the requirements in the majority of states in which they operated.

- Medevac flights were forced to review standard operating procedures (SOPs) and risks every two days, due to the rapidly changing landscape.
- Flight crews of all sizes of operations risked exposure to infection.
- Many jurisdictions' health requirements were not available to flight crew until they were on site.
- With respect to SMS implementation, generally, large operators have implemented SMS, but small operators experienced challenges.
- Operators of all sizes had to function with SMS during the pandemic, and small operators found it challenging to implement SMS.

- Many operators have further matured their SMSs and adjusted them to account for pandemic-driven changes, thus helping to ensure safe operations.
- Evidence from the assessment has confirmed that smaller operators in many cases saw their level of activity increase during the pandemic, not only for cargo operations, but also for specialty operations, including offshore and medevac flights. Those operators faced challenges similar to those of large operators, including similar risks, and they were required to perform risk assessments on a regular basis.
- The return to normal operations resulted in an increase of events seen in flight data analysis such as unstabilized approaches. This was mitigated by earlier simulator training (prior to the scheduled recurrent training). Some of the earlier flights had an extra trainer or instructor in the cockpit.
- New SOPs were established by many air operators based on risk assessments, including recommendations from their respective CAAs, ICAO and the World Health Organization (WHO). Many airlines also arranged to create travel bubbles (agreements between countries, especially those with low numbers of COVID-19 cases, to open their borders to each other) to facilitate restart operations. /
- Special operations/flights had to be performed at the beginning of the pandemic to evacuate nationals all over the world, which required special SOPs, evacuation plans, hotel coordination and foreign government coordination. The special SOPs were updated almost monthly during the peak of the pandemic.
- While SOPs were being revisited or updated, operators had to be cognizant that changes should only be introduced when necessary, as significant changes required further training and also created additional fatigue for all staff.
- Changes in work processes (such as changing configurations from passenger to cargo or expanding to include freight) required prompt and clear communication, increased surveillance and spot-checks, due to new risks arising from the change in processes, as well as residual risks.
- Early efforts on risk assessments became overwhelming and required new SOPs to be defined on a frequent basis to gather information throughout the pandemic.

3.2 **Key Takeaways:**

- An SMS is the cornerstone of an effective strategy to prevent hazards from becoming unrecoverable risks. The myriad changes introduced at all organizational levels — dramatically reduced schedules, parked aircraft, layoffs, loss of experienced personnel, recruiting new employees to keep pace with recovery and developing COVID-19–related safety and wellness procedures, to name a few — have tested all operators and States' abilities to identify and manage risk resulting from pandemic-related changes.
- The enhancement of the sharing and exchange of safety information will facilitate the development of safety intelligence for management of safety risks at all levels. Exploring and analyzing lessons learned from existing risk management strategies in all sectors and at all levels helps to build aviation safety intelligence and add to safety data collection to support the identification of hazards and safety data analysis.

- While the level of SMS maturity varied by operator, the industry has benefited from the fact that most operators have been implementing SMS for more than a decade. Over the past two years, many operators have further matured their SMS and adjusted them to account for pandemic-driven changes, thus helping to ensure safe operations. However, the assessment has revealed the benefits of and the need for a review of operational safety risk assessment processes on a routine (frequent) basis, to identify new risks, hazards and mitigations related to flight operations during the pandemic.
- States should consider establishing SMS in a more simplified or scalable approach for smaller operators. Additionally, operators of smaller aircraft should be encouraged to engage with their airline associations and the International Air Transport Association (IATA) to benefit from programs such as the IATA Standard Safety Assessment (ISSA).
- Operators of smaller aircraft are encouraged to receive enhanced training in SMS to augment the safety level capacity.
- There is a need to develop and train more service provider staff in high uncertainty scenario risk assessments. This type of training has proved essential for effective decision-making.

4.0 **Change Management** — Thirty-eight percent of the operators indicated that a change management process was applied across their entire company, without exception. Fifty-one percent managed to mitigate the risk arising from workforce changes during the pandemic well or exceptionally well. Hazard identification, risk assessments and safety culture promotion are fundamentals for a strong SMS. However, 29 percent of operators surveyed indicated that their organizations' handling of this issue was average to poor.

4.1 **Key Takeaways:**

- Organizations/operators need to review internal controls and processes for change management in light of the transition to the post-COVID-19 environment. Any changes to operations should not unintentionally reduce the effectiveness of deployed mitigations. If changes are required, a plan should be provided and special surveillance programs implemented to monitor, identify and mitigate potential undesired impacts.
- Organizations should continuously promote change management through their safety committee or other forums, with the aim of maintaining a culture of change, with information being exchanged at all levels.
- Organizations should create multi-disciplinary groups, when necessary, to assess risks from different perspectives. This would ensure a better performance in the implementation of mitigation or control measures.
- The main challenges encountered with change management were the timeline in which to implement the change, train all the personnel involved, sign contracts, and develop and authorize procedures or manuals.
- Most of the changes encountered by airlines were due to the pandemic, which resulted in an increase in change management processes. Finding new routes and new markets was crucial for operators.

- During the pandemic, most airlines changed their strategic plan and outlook model to move from transporting only passengers to moving passengers and cargo. In many cases, cargo-only flights were conducted, including charter for cargo. This change in type of operations required extensive coordination and approvals from regulators.

4.2 **Key Takeaways:**

- Organizations need to address the management of change effectively and regulators need to engage with their organizations to ensure that the results are safe and effective. The cooperation and relationship with the regulator are extremely important to ensure a smooth and relatively quick approval process.
- Organizations /operators need to review internal controls and processes for change management in light of the transition to the post-COVID-19 environment. They should ensure any changes to operations do not unintentionally reduce the effectiveness of deployed mitigations. If changes are required, organizations/operators should provide a plan and special surveillance programs to monitor, identify and mitigate potential undesired impacts.

- It takes visionary thinking to practice good change management and think through everything that could happen, including the ability to forecast effectively everything related to risk for flight safety and to conduct operational safety risk assessments, as appropriate.

5.0 **CAA and Industry Cooperation** — Survey respondents were asked a series of questions to determine the level of interaction and cooperation between the industry and CAAs based on what was called for in the CART recommendations. The top exemptions, alleviations and extensions issued by CAAs for adapting flight operations in the new normal during the pandemic were related to pilot proficiency checks, pilot recent experience, pilot license validity and pilot medical certificates. Sixty-eight percent of the operators received targeted exemptions, exceptions or alleviations. Forty percent of operators requested extensions from their CAAs to flight duty periods, of which all were processed. Sixty-eight percent of operators requested and received exemptions to address in cargo in cabin solutions.

5.1 **Key Outcomes:**

- A collaborative decision-making process between regulator and operator was proved successful. Some States established industry committees comprised of airlines, airline associations and airport operators to devise strategies to cope with the impact of the pandemic. That helped to serve as a coordination mechanism among the civil aviation industry and health authorities to support the prompt identification of a fast recovery once demands started to return to normal levels. The committee focused on identifying alleviation measures and coordinating communication strategies to gain passenger confidence in air transport.
- The establishment of a collaborative safety team (CST), in particular within the SAM and NACC regions, enhanced the information-sharing needed during the pandemic between the regulator and service provider.

- We witnessed examples of good safety management practices among regulators and industry that facilitated the ability to make risk-informed decisions by assessing the situation and devising strategies to alleviate some overly prescriptive requirements while at the same time ensuring risks were maintained at acceptable levels.
- Extensive coordination and cooperation were triggered among industry, States, international organizations and original equipment manufacturers (OEMs).
- Some regulators issued safety bulletins in line with IATA guidelines, which significantly helped the industry.
- In the majority of cases, communications with the regulator were enhanced during the pandemic. Regulators provided additional guidance on mitigating measures, particularly when exemptions were requested.
- Regulators were required to publish the temporary exemptions as differences as promoted by ICAO to facilitate air operators' routes across borders. However, the number of published differences were far fewer than the temporary exemptions that were issued.
- The regulator and industry (service provider) have been severely impacted in the past couple of years due to the pandemic. With this, we have to recognize that risks were introduced at all levels.
- Fewer on-site visits were performed. However, an increase in virtual monitoring activities was introduced. While virtual monitoring has been beneficial, it does not replace the benefits of on-site visits; however, it is complementary.
- There is a need to harmonize world health requirements between States and within States. A more harmonized approach is needed to ensure a standardized approach to dealing with health requirements versus the requirements directed by aviation ministries and the World Health Organization.

5.2 **Key Takeaways:**

- CAA and industry cooperation was enhanced. However, we must recognize that everyone (regulator and industry) has been severely impacted these past couple of years, and with this, we have to recognize the introduction of new risks at all levels.
- CAA oversight has been reduced, with fewer on-site visits or in many cases, an increased time interval between checks. This was compensated for by the performance of virtual visits, increased communications (in some cases), and the issuance of temporary exemptions. We have to recognize that occurrence data collection has been reduced in proportion with traffic. Furthermore, data analysis may have been impacted with the loss of expertise (temporary or permanent) in this area by both the regulator and industry. This creates a risk that we must consider.
- Managing the many waivers and exemptions issued to enable the industry to survive the pandemic and begin recovery should be an area of extra focus as SSPs mature over the next several years.
- The level of maturity of safety management processes varied considerably between operators as well as regulators. The industry lacks guidance on a pathway to mature safety management processes. The industry could benefit from a road map on building a mature SMS process.

6.0 **Human Factors/Crew Resource Management and Mental Health** — Fifty-seven percent of the operators surveyed indicated that staff reported increased fatigue associated with returning to work following a long period of inactivity, constant alertness to ongoing fears and concerns around

employment, infection and protection. Fifty-four percent reported an increase in stress due to nonstandard operations. Forty-nine percent reported reduced knowledge and skills, and 44 percent reported a breakdown in crew communication and alignment. Thirty-eight percent of respondents were concerned by reduced reporting of non-conformities, 21 percent reported an increase in risk-taking, and 37 percent of the operators indicated that there was an increase in the level of reports on mental health during the pandemic. It is worth noting that while there is no ICAO provision for States to require air operators to establish mental health programs, almost 54 percent of operators had put in place a program to deal with mental health.

6.1 **Key Outcomes:**

- We need to strongly encourage a robust safety reporting culture with special emphasis on safety-related issues in the COVID-19 and post-COVID-19 pandemic environment.
- Organizations should pay close attention to fatigue reporting and actively support reporting of fatigue and other occurrences via a strong just culture.
- Operators should be aware that personnel returning to the workforce and those who continued working through the pandemic may be under higher-than-normal levels of psychological stress.
- Organizations and regulators need to understand the sources of aviation professionals' fear, increased stress and distraction, all of which can potentially reduce staff performance levels and impact safety.
- Smaller carriers that do not necessarily have a stress and mental health program should at least have an open communication channel with all staff at all levels.
- Reporting on mental health still carries a bit of social stigma, and more effort is needed to encourage a robust safety reporting culture. Some operators, particularly in the MID and APAC regions, expressed the challenges in allowing an open discussion on mental health.
- The long-term effect of working from home without human interaction has had an impact on staff mentally.
- Fatigue was an issue when returning to the office, as people have become unaccustomed to the physical working environment.
- The impact of the pandemic has increased stress levels on pilots as they fly less frequently and in a changed environment.
- The launching of confidential peer support programs that act as a support system for pilot crewmembers and their families, while not mandatory, has provided significant benefits. Such programs help detect potential issues with a pilot's state of mental health before it becomes problematic.
- Increased communication with all staff was an important factor in helping staff members and crewmembers feel connected with the organization.
- Operators should monitor crew experience to avoid pairing less experienced crewmembers. Match an experienced crewmember with a less-experienced crewmember to provide enhanced training and mentoring and reduce potential errors.
- One beneficial tactic was the establishment of peer-to-peer groups to provide technical support to staff, just to keep everyone aware of operations, particularly during down time during the pandemic.

6.2 **Key Takeaways:**

- The pandemic has had an extensive impact on the well-being of aviation professionals across the industry. The Foundation urges all stakeholders to assess these impacts and mitigate them in their safety programs, and to make the appropriate resources and support available to all personnel.
- Human factors and issues of mental health have impacted all organizations. This requires not only effective mental health programs for staff, but also for measures to be put in place to reduce the possibility of these issues arising.
- Risks can be introduced when staff resources are disrupted, especially when highly specialized staff are impacted. Crew resource management, in particular, would be impacted by disruptions.

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