



## Safety Information Bulletin

<b>CAAS SIB No.</b>	2020-01 R1
<b>Issued</b>	1 October 2021
<b>Subject</b>	COVID-19: Potential hazards and risks associated with the upsurge of AOC operations.
<b>Ref. Publication(s)</b>	Nil.
<b>Purpose</b>	This SIB was originally issued on 1 September 2020 to advise AOC Holders on the concerns of potential hazards and risks that may manifest themselves during the ramped-up of operations. It is updated in the Revision 1 in view of the evolving impact of the COVID-19 situation.
<b>Applicability</b>	All Singapore Air Operator Certificate (AOC) Holders.
<b>Cancellation</b>	This revision cancels the first issuance dated 21 September 2020.
<b>Description</b>	<p>The COVID-19 restrictions/limitations have resulted in the lockdown of cities, implementation of working-from-home practices, social distancing, and shutting down of businesses. Air travel has been seriously disrupted due to border restrictions by most countries. Airline operations were scaled down by as much as 90 percent, resulting in aircraft being put into long-term parking and storage, and staff furloughed. The effects of these measures have cascaded down through to the supply chain of aviation service providers.</p> <p>As the aviation industry begins to ramp up its operations to a “New Normal”, there could be a need for AOC holders to manage the changes to its operations. The dynamic situation entails that changes to business models will require better risk management to mitigate any safety risks and hazards associated with an upsurge of services. AOC holders should ensure that operational demands resulting from an increase in operations must not be allowed to exceed the operational capabilities of the organisation.</p> <p>Some identified potential hazards and risks are collated and grouped under various headings below. AOC holders should have in place recovery plans incorporating hazard/risk management to address/mitigate the potential issues as shown below. Do note that potential hazards and risks are not limited to those listed below, as there will be others that are unique to each company’s structure, system and operations. In any instance, hazards and risks that are</p>

caused by COVID-19 pandemic must be identified and mitigated to ensure continued safe aircraft operations.

### **Organisation/Management**

- 1 Operations may see changes to business models and company structure. Changes affecting AOC holders include the introduction of touchless travel, adjustment to inflight services, repurposing of passenger cabins for conveyance of parcels/cargo, and increased use of technology and digitalisation of work. Staff may find these changes and disruptions challenging. The changes if not properly managed may result in gaps in the company's operations.
- 2 As the staff become accustomed to new procedures and processes for handling of new businesses, they may be subjected to further changes as business models continue to evolve under COVID-19. If not properly managed, these changes may create situations where staff are not up to speed on the changes and carry out work using outdated procedures and processes. The evolving changes will also create similar challenges for the supply chain supporting the operations.
- 3 Some AOC holders may implement changes to their organisation to maintain competitiveness. The reorganisation may result in the reduction of its workforce including potentially the loss of key personnel or experienced specialists. As the aviation industry employs a highly specialised workforce, in-depth knowledge is often required for the accomplishment of tasks related to the aircraft operation. The loss of such personnel with in-depth knowledge and years of experience could have a detrimental impact on safe operation of aircraft.
- 4 New operating models such as carrying cargo in the passenger cabin will require the implementation of new procedures. Pilots, cabin crew, and other operational staff may not be familiar with new safety procedures regarding carriage of cargo in place of passengers. This can lead to mistakes and lack of adherence to safety procedures.

### **Experience/Recency/Training**

- 5 Pilot training and checks (i.e. recency of experience, operator proficiency and line checks, number of take-off/landings) may have lagged during the AOC scaled-down operations. There is also the lack of routine line flying by pilots, with flying opportunities not evenly spread across the different fleets amongst the AOC holders. The degradation of psychomotor skills and knowledge may result in the following:
  - Reduced situational awareness
  - Degradation of handling skills resulting in unstable approaches
  - Poor reaction time and recovery techniques
  - Poor recall of memory items
  - Incorrect fuel calculation
  - Incorrect weight and balance calculation
  - Poor cockpit preparation and briefing
- 6 AOC holders operating with limited resources and high workload during ramped-up operations may have difficulty in the management of the various types of pilot training. Mandatory recurrent training may have expired, rendering the pilot out of recency.

- 7 The utilisation of Synthetic Flying Instructors (SFI) would have been reduced due to Type Rating Training Organisations (TRTOs) reducing their operations because of the pandemic. With prolonged inactivity, the SFI's quality of instruction would be diminished. This could result in pilots receiving low-quality training with possible safety issues arising as a result. The impact will be greater on new pilots than experienced pilots.
- 8 As the number of air services has reduced significantly, the ability of Multi Fleet Flying (MFF) qualified pilots to have sufficient opportunity to operate both aircraft types are correspondingly reduced. This could lead to less than optimum operation (knowledge as well as handling skills) by the pilots for both aircraft types and could result in operational safety issues. The lack of familiarity can also lead to confusion or mix-up of procedures in the cockpit.
- 9 Cabin crew on dual-fleet or triple-fleet flying will have insufficient exposure to the different aircraft cabin types during the scaled-down operations. As operations are being ramped up and different aircraft types are brought back into service, the unfamiliarity with the different cabin layouts could result in cabin safety and evacuation issues.
- 10 Cabin crew under furlough may have diminished standards in their job skills, knowledge, and aptitude when recalled for flying duties. Expedient and correct responses to inflight events like turbulences, injured/sick passengers, disorderly passengers, smoke/fire in the cabin, etc., will require readiness of mind to handle the various situations. Without adequate retraining, it may lead to incorrect responses to an emergency situation.
- 11 To prevent the spread of COVID, training requirements may need to be met through Alternate Means of Compliance (AMC). Examples of areas where AMCs are exercised include donning of protective breathing equipment (PBE) and water survival. However, prolonged use of AMCs may reduce the effectiveness of certain training. Normal training processes should be restored as soon as is practicable.
- 12 To support ramped-up operations, there may need to be an increase in training courses to ensure sufficient crew are operationally ready which may cause a strain in resources such as availability of training apparatus and facilities.

### **Operational Control**

- 13 During the pandemic, AOC holders are working with scaled-down resources. Without an increase in the workforce and resources during the ramp-up of operations, operational demands may exceed operational capabilities, resulting in the lack or late updating of flight data and documents. Outdated flight related information may lead to incorrect flight routings, diversion information, and aircraft performance computations.
- 14 Many approvals and certificates related to aircraft operations issued by CAAS and other aviation authorities have expiry dates. During the period of AOC scaled-down operations, the validity of the approvals and certificates may be overlooked. Similarly, internal company authorisations to staff if not tracked closely may result in staff working with invalid authorisations.

- 15 In the event of a rapid ramp up of services, there will be significant workload increases for staff responsible for the scheduling of pilots. Last-minute changes in flight schedules can lead to mistakes and may impose a rush factor on pilots.
- 16 With changes in procedures such as new cargo arrangements, flight dispatchers not familiar with the changes can have an impact on the quality of their work, and errors may be introduced in their processing of the flight documents.
- 17 Monitoring of the airworthiness of the aircraft is crucial for safe flight. MEL and CDL items need to be tracked carefully for performance restrictions on the aircraft, crew actions in flight, and maintenance actions to be taken before the flight. EDTO requirements need to be strictly complied with. Preparation of flight requires the coordination of various departments of the AOC holder and its maintenance service providers. Lapses in the required actions for the preparation of flight by the AOC holder or its service providers may result in an unsafe flight.
- 18 As the AOC holders ramp up their operations with limited active pilots, those with insufficient experience on a new aircraft type may be rostered to unfamiliar airports. The lack of familiarity with airports may lead to approach and landing incidents.
- 19 As the AOC starts bringing its aircraft back into service, the aircraft may need to be operated in various configurations depending on new market demands. Large variations in take-off weight can lead to unusual handling characteristics. Unusual trim conditions can result in tail strikes and extremely light aircrafts coupled with high power settings resulting in altitude bust.
- 20 During the AOC scaled-down operations, line pilots are scheduled accordingly for flying to meet the regulatory requirements for recency. Depending on a pilot's experience on that particular aircraft, even if regulatory requirements are met, there is a risk of pilots becoming "rusty" if their flying is reduced to the minimum. In reduced operations, underload may create a sense of a less risky operating environment, potentially causing the crew to become complacent, not completely following procedures and/or to be less alert.
- 21 As more flights are being put back online, should there be insufficient operational pilots or cabin crew, fatigue is of concern. There may also be a lack of rest facilities at some destinations and extended duty periods may be an issue. The performance of the crew will be affected if fatigue levels are not monitored.
- 22 With ramped-up of services, the turnaround of the aircraft at foreign airports may be handled by newly appointed service providers like fuel suppliers, cargo handlers, and technical handling agents providing line maintenance. Dangerous goods handling, quality of fuel, and maintenance of aircraft are areas that have a direct impact on the safe operation of aircraft. Lapses in the assessment of the quality and standard of service providers may result in an unsafe action being performed on the aircraft.

### **Aircraft and Equipment**

- 23 Aircraft under storage may have some of its scheduled maintenance deferred until the need for return to service. All required maintenance for aircraft brought back to service must adhere to the OEM's requirements to prevent degraded performance of the aircraft. When there is a surge of aircraft to be ready for operations, required

maintenance work may overwhelm service providers such as maintenance organisations. As services resume, there is risk of lapses in the monitoring of the maintenance work on the aircraft, potentially resulting in missed-out maintenance tasks.

*Note: CAAS has published a SIB No: 2020-02 for aircraft under prolonged parking/storage during the COVID-19 pandemic period. AOC holders should refer to the SIB for guidance on maintenance tasks for parked aircraft.*

- 24 Aircraft under storage in an overseas location is maintained by the on-site maintenance contractor engaged by the AOC holder. When the aircraft is assigned for return to service, the maintenance contractor may not have the full capability to perform major maintenance for the aircraft and the AOC holder's principal maintenance contractor may need to be brought over with equipment and tools to perform the necessary work. As the aircraft is away from the base (HQ), the quality assurance and control could be challenging. Without proper coordination and close monitoring of the maintenance work on the aircraft may result in missed-out tasks.
- 25 Several aircraft under parking were found with insect nesting in the pitot probes. Storage aircraft brought back into service without ensuring that the pitot-static systems are inspected and checked for proper operation can lead to a serious incident/accident.
- 26 Equipment and tools for the ground servicing and maintenance of the aircraft could be left unattended or not properly maintained during the scaled-down operations of the AOC holders. Equipment and tools that are left unused for some period may not function correctly. The use of such equipment and tools may result in damage to aircraft or injury to personnel. As services ramp up, there is a risk of insufficient equipment and tools to support the maintenance work on the aircraft.

### **Service Providers**

- 27 Overseas service providers for flight dispatch (remote operations) have to constantly adjust to changes in dispatch procedures for all its customer airlines as the airlines ramp up their operations. Situations may arise that such dispatch remote operations may not have all the latest AOC operational information due to the frequent changes to circulars or the mixing up of information from different airlines. This can result in errors in route, fuel and alternate airport planning.
- 28 Line Station Ground Handling Agents are also affected by this pandemic. With reduced operations and experienced staff being retired, load masters or new staff may not be that current with its SOPs or new airline procedures. Areas of concern of ground handling agents include inadequacy of resources, security, ramp safety, cargo operations, computation of load sheet, dangerous goods handling, despatch and load control. There will be large variations in load and take-off weight as requirements differ for different flight sectors. There may be an increased risk of load sheet and loading errors.
- 29 Overseas Ground/Technical Agents in countries or cities with movement restrictions may face staff shortages or difficulties in staff scheduling. This could have an impact as the AOC holders increase the number of flights or ramp up its operations. Such challenges may result in safety lapses during the handling/servicing of the aircraft.

- 30 As the AOC holder cuts back on its expenses, situations may arise whereby payment for goods and services provided by its contractors in the supply chain may be overlooked, resulting in non or late payments. The stoppage of support from its supply chain can result in dire consequences to the safe operation of the aircraft.
- 31 Service providers for the management of the AOC aircraft fleet (FTM) and spares (ITM) have also scaled down their operations. When the AOC holder ramps up its operations, the FTM and ITM service providers may have difficulty handling the increased workload which may result in errors on the tracking of aircraft usage (flight cycles, flight hours, date) and the maintenance being carried out on the aircraft.

### **Dangerous Goods**

- 32 Some States have granted exemptions to ground handling agents from mandatory dangerous goods recurrent training for its staff during the COVID-19 period. The absence of recurrent training beyond 24 months may result in personnel not being updated with changes to the regulations and/or procedures, potentially increasing the risk of errors and incidents in the handling of dangerous goods.
- 33 Ground handling staff returning from furlough may not be aware or familiar with new procedures and requirements, for example, the loading of cargo in the passenger cabin. This may lead to the acceptance and loading of cargo or mail containing dangerous goods in the passenger cabin.
- 34 Recruitment and training of new cargo handling staff, particularly skilled personnel such as dangerous goods acceptance staff may require a lead time of several months. This may result in shortage of skilled personnel potentially causing dangerous goods that are not in compliance with the regulations to be transported erroneously when cargo volume picks up. In addition, prolonged border control restrictions may further limit the availability and sources of competent personnel. AOC holders need to anticipate the competent ground and cargo handling personnel may not be immediately available when cargo handling volume increases.
- 35 The changes in operation requirements during different phases of the pandemic would result in the fluctuation of manpower requirements. The suspension of operation or the reduction in cargo volume and dangerous goods handling activities may result in AOC holders scaling back on their monitoring and oversight of services provided by ground and cargo handling agents. This may potentially lead to an increase in risk of non-compliance with the regulations and AOC Holder's procedures by the agents when cargo and dangerous goods handling activities pick up. Likewise, when newly trained staff are deployed to accept and handle cargo and dangerous goods when cargo handling volume picks up, inadequate supervision or monitoring may increase the risk of AOC holders accepting undeclared dangerous goods or dangerous goods that do not fully comply with all the requirements of the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air.

- 36 Increased awareness of hand hygiene may result in passengers carrying larger quantities of hand sanitizers containing alcohol in their checked and/or carry-on baggage beyond the quantity limits permitted to be carried by passengers. AOC holders may also stow larger quantities of hand sanitizers in the galley for crew or passenger use. Large quantities of hand sanitizers containing alcohol carried on an aircraft may pose a fire risk when not properly stowed.

### Human Factors

- 37 Human performance is a priority in the total safety system and needs to be recognised and supported by the AOC holders. The stressors of COVID-19 pandemic coupled with newly assigned tasks will be challenging at times for staff, creating stress and anxiety that can weigh heavily on people's minds. The risk to safe operations is that this high level of additional stressors may reduce a person's capacity and ability to perform or monitor themselves as effectively as would be usual, resulting in mistakes and lapses his or her work.
- 38 With the Safe Management Measures (SMMs) in place, procedural changes, such as management of disruptive passengers, may increase cabin crew workload and lead to fatigue amongst cabin crew.
- 39 During this difficult time with airlines struggling to contain costs, staff may be distracted by psychological pressure due to the possibility of wage cuts, retrenchment, financial debts, and fear of contracting the COVID-19 at work. High levels of uncertainty provoke a range of feelings that are not generally experienced during the regular work routine of pre-COVID. These distractions may cause fatigue, lack of focus/alertness, degraded performance, increased risk-taking and potentially impacting safety. The situation will be exacerbated when personnel of the same team or department are distracted by the same or similar psychological pressures.

### Emerging Issues

- 40 As the aircraft goes into service, the flight deck and passenger cabin will require regular disinfecting and cleaning with disinfection products. It must be noted that only products approved by the aircraft manufacturer OEM be used for the disinfecting and cleaning process. The use of other commercial disinfection agents may cause damage to the aircraft interior and electrical/electronic components.  
*Note: AOC holders can refer to the IATA manual on Aircraft Cleaning and Disinfection Edition-1 published on 19 June 2020.*
- 41 The flight deck is installed with critical electronic instruments and equipment for control of the aircraft. Display screens and control switches are sensitive devices and may cause system malfunctions when contaminated by the cleaning agents. Also the use of a cleaning agent containing alcohol has a fire risk as the flight deck may have a potential ignition source. Therefore, cleaning of the aircraft flight deck by persons not appropriately trained can result in costly damages to the aircraft.
- 42 Due to travel restrictions during the pandemic, AOC holders are not able to carry out briefings/trainings and inspections/audits of its overseas service providers like flight dispatchers, aircraft maintenance providers, ground handlers, cargo handlers, etc. Without on-site inspections and audits, the AOC holder may not be able to pick up incorrect practices or non-adherence to new procedures by the overseas service providers. It is also difficult to determine the actual adequacy of resources

(manpower & equipment) for the handling of the flight. The deficiencies if not detected may cause the introduction of unsafe practices during the handling of a flight.

- 43 As the aviation industry tries to manage with reduced resources, changes to procedures/business models and staff working remotely from home, cyber hackers could make use of the opportunity presented to exploit IT vulnerabilities. AOC holders need to be mindful of an increase of cyber-security issues related to the pandemic situation. Corrupted data or information related to flight operations or airworthiness of aircraft can lead to a serious flight incident.

**Recommendation(s)** Singapore AOC holders are strongly urged to use the above and any other pertinent information to address any potential hazards/risks that may arise during the ramping up of operations. Singapore AOC holders are also encouraged to contact their respective Principal Operations Inspectors (POIs) to share any additional information regarding the threat and risk to safety and security of civil aviation.

**Contact(s)** For further information, contact respective POIs or [CAAS\\_AFO\\_Infocenter@caas.gov.sg](mailto:CAAS_AFO_Infocenter@caas.gov.sg)