

MODEL ADVISORY CIRCULAR

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SUBJECT: RETURN TO SERVICE OF AIRCRAFT THAT WERE STORED DURING THE COVID-19 PANDEMIC

1. PURPOSE

This advisory circular (AC) provides information and guidance on the measures that can be applied by air operators in order to obtain the release to service for aircraft that have not been in operation during the COVID-19 pandemic.

2. SCOPE

It is intended for operators whose aircraft have been preserved by a maintenance and repair organization (MRO) during the COVID-19 pandemic.

3. APPLICABILITY

This guidance material is not of a mandatory or regulatory nature. It describes acceptable means, but not the only means, that an operator can apply to address the changes generated by the COVID-19, in terms of obtaining the release to service for aircraft that have been stored as a result of the COVID-19 pandemic.

4. ANNEXES AND REGULATIONS RELATED TO THIS AC

- a) Annex 6, Part I, II and III – Responsibility for aircraft continuing airworthiness
- b) Annex 8 – Airworthiness, Chapter 6, Paragraph 6.8 – Maintenance release
- c) Regulations 91, 121 and 135, Chapter on “Maintenance control and requirements”
- d) Regulation 145, Chapter D – Operating rules

5. RELATED DOCUMENTS

- Recommendation 3 of the safety measures of the ICAO Council Aviation Recovery Task Force (CART) report.
- SAM Strategic Framework – Orderly reactivation focus area.

6. INTRODUCTION

- 6.1. The world of aviation has been greatly affected by the COVID-19 pandemic. Air operations have been drastically reduced or completely suspended, putting an unprecedented number of aircraft on the ground. This situation has put financial pressure on operators, service providers and the entire supply chain.
- 6.2. Currently, States have initiated a gradual lifting of restrictions on domestic and inter-State flights, and operators have begun to resume their flights. The first step is to restore the airworthiness of aircraft in storage for weeks or months as a result of the COVID-19 pandemic.

- 6.3. It is very likely that the affected organisations were not prepared for the rapid storage of their aircraft, causing some hazards affecting the return to service of the aircraft to be not obvious. It is at this time that organisations' safety management systems play an essential role in identifying hazards and defining strategies to mitigate associated risks, ensuring the safe return of aircraft to normal operations. Unlike traditional management systems that use known past events and experiences to identify hazards and develop mitigations, the current situation requires proactive anticipation of potential difficulties, due consideration and rapid adaptation of internal processes based on lessons learned from the first aircraft returning to operations.
- 6.4. The International Civil Aviation Organization (ICAO), with a view to facilitating safe operations during the COVID-19 pandemic, through letter AN 11/55-20/50 dated 3 April 2020, encouraged States to be flexible in their approaches, while adhering to their obligations under the Convention on International Civil Aviation (Doc 7300, Chicago Convention).
- 6.5. Following ICAO guidelines, States have taken various measures to ensure that service providers and aviation personnel maintain the validity of their certificates, licences and other approvals during the COVID-19 pandemic. These measures, which may include temporary deferrals of national regulatory requirements, also known as extensions, reliefs or easing of measures, and which are necessary to maintain aviation operations during the COVID-19 pandemic, constitute temporary exemptions or deviations and therefore must be reported as differences under Article 38 of the Chicago Convention. See Paragraph 1.2.5 of ICAO Doc 10050, on temporary or short-term differences.
- 6.6. Within the ICAO safety management system (SMS), change management, which is part of Component 3 - Safety Assurance, explains the factors that change a service provider's experience, such as changes to the organisation's operating environment, external regulatory changes, economic changes and emerging risks. A more detailed analysis of this element follows.

7. SAFETY RISK MANAGEMENT

- 7.1. Several actors are involved in the safety risk management analysis processes (operations departments, MROs, type certificate holders (TCH), Civil Aviation Authorities (CAA), etc.). However, it is the operator's continuing airworthiness management department that must lead this process of hazard identification and safety risk management, as it knows the configuration and condition of the aircraft and is responsible for ensuring the airworthiness condition of the aircraft before starting operations.
- 7.2. The operator's continuing airworthiness management department will analyse the process to be followed to return the aircraft to service and to deliver it to the operations department / customer. This analysis must be carried out in close cooperation with the MRO responsible for collecting the first data on the condition of the stored aircraft.
- 7.3. Not all events or hazards can or should be investigated; the decision to conduct an investigation and the depth of the investigation will depend on the actual or potential consequences of the event or hazard in question. Events and hazards considered to be of potentially high risk are more likely to be investigated and such investigation should be done in greater depth than those of potentially lower risk. Service providers should take a structured decision-making approach, with defined trigger points. These should guide decisions in safety investigations, *i.e.*, the purpose and scope of the investigation, which could include:
 - a) the severity or likely severity of the outcome;
 - b) regulatory or institutional requirements for conducting an investigation;
 - c) the safety value to be achieved;
 - d) opportunity to take safety measures;
 - e) risks related to non-investigation;
 - f) contribution to specified safety programmes;
 - g) identified trends;

- h) training benefits; and
 - i) availability of resources.
- 7.4. Regarding the identification of hazards related to stored aircraft, the operator's continuing airworthiness management department, in coordination with the MRO, could consider the following and ask the following questions:

Starting point and current status of each individual aircraft:

- What was the aircraft condition when stored?
- Were the type certificate holder's storage procedures followed?
- Were storage procedures followed throughout the full period?
- Was it conducted by a duly certified and rated MRO?
- Have there been sufficient protective covers available for the entire fleet or the MRO has used alternative methods?
- Is there sufficient tools and ground equipment available?
- Has the certificate of airworthiness (CofA) expired?
- What scheduled maintenance tasks were delayed during the storage period?
- Has any airworthiness directive (AD) been considered?
- What typical maintenance tasks will be required after storage?
- Have aircraft components been robbed (lost during storage)?
- Could the aircraft have been sustained damaged?
- What is the situation in regarding items that had been deferred using the minimum equipment list (MEL) or any "maintenance task to be performed"?

Fuel condition:

- Have approved preservative chemicals (biocide) been used in the fuel and in the amount set by the aircraft/engine manufacturer?

Supply chain:

- Will components, parts and materials available as needed to avoid disruption?
- Will the tools and other necessary equipment available at the MRO?
- Are adequate proper supply chain agreements in place to ensure that work can be done as agreed?
- Have lessors and/or other owners of aircraft/components been informed?

Human resources: Plan ahead for staff who need to work on the different stages of the process.

- Are the required personnel available in healthy conditions and not in quarantine?
- Can staff travel in the aircraft?
- Might health safety recommendations for people affect the way they work?
- Are staff able to access the facilities?
- Could MRO staff be distracted, interrupted or preoccupied and therefore not focused on its tasks, because of COVID-19?
- Are the MRO staff well qualified and competent to follow storage procedures?

Information access and exchange:

- Is information of the aircraft accessible remotely to all relevant staff and organisations involved?
- Can the instructions for continuing airworthiness (ICA) be accessed?
- Can staff communicate easily within the organisation and between different organisations?

Note: Consider whether information technology (IT) resources could affect your operations if you need to organise virtual meetings and any impact on telephone communications.

Procedures:

- When was the last time the MRO used the procedures for return to service of aircraft on long-term storage?
- Is this procedure still appropriate for the current scenario and does it comply with the rules?
- Are the personnel positions referred to in the procedure (particularly decision-making positions) currently staffed and do they understand their roles?

Combination of the above elements:

- Is there a chance that the combination of multiple elements considered above will increase the level of risk for the restart of operations?

Informing others of your intentions:

- Are other organisations involved aware of the operator's intentions and does the continuing airworthiness management department understand the needs of their customers?

In particular:

- MROs: need to plan resources, hangar space, procure spare parts and consumables, relocate tools and ground equipment, potentially acquire special tools and double-check the status of calibrated tools and status of the maintenance data;
- Type certificate holders (TCH): clarification of the instructions to be followed, additional support in the form of a non-technical objection or repair designs due to any damage occurred to the aircraft during storage, additional instructions in case the storage procedures are not followed;
- Flight department, including planning operations: Before the first flight, there is a need for coordination in order to identify the need for aircraft with a specific configuration (e.g. cargo in the passenger cabin) and for inputs, as if it were a verification flight, or for an in-depth review of the pre-flight inspection/verification for the first flight, as well as the exchange of information recorded in the on-board maintenance computer, discussion of the status of deferred items and the consequences for the flight crew. If a check flight is needed, identification of special attention items that the flight crew should focus on during the flight, such as discrepancies in speed and altitude indications and engine parameters, must be identified. The coordination should also include special controls before performing extended diversion time operations (EDTO), performance-based navigation (PBN) and reduced vertical separation minimum (RVSM) operations;
- Lessors and other equipment owners of the aircraft and their parts: assess the impact of decisions on existing commercial contractual arrangements and, if necessary, discuss possible solutions;

- Other service provided by a third party: consider any additional input or need for coordination, for example instance in relation to line maintenance support at any destination and in relation to the quality of fuel at airports; and
 - CAA: contact them in advance for any request, such as a special flight permit (SFP), exemption, aircraft maintenance programme variations, expired certifying staff licences or issuance of the certificate of airworthiness.
- 7.5. It is essential that information relating to particular defects, unexpected findings and conditions encountered by the MRO on aircraft while prepared for return to service and which can reasonably be assumed to be linked with storage is collected and linked, where appropriate, to a fleet of aircraft being stored in the same or similar condition. As a matter of fact, the same types of aircraft stored at the same time and in the same environment are expected to behave in the same way. This data should be collected as soon as possible after the manifestation of the defect or condition in a single aircraft and exchanged with the continuing airworthiness department without delay. Some conclusions may also need to be communicated to the type certificate holder and the CAA.
- 7.6. The operator's continuing airworthiness management department should have a team of experienced personnel ready to analyse this data and be able to develop amendments to maintenance work orders/job cards or other documents such as the pre-flight inspection.
- 7.7. Safety risk management mechanisms should be regularly reviewed and adjusted to ensure that they remain appropriate to the operator's environment. Risk classification may be more appropriate if the operator has more experience in safety management; this will allow the operator to make data-based decisions to determine what types of safety risk controls will be needed.
- 7.8. Once safety risk control is agreed and implemented, safety performance must be monitored to ensure the effectiveness of such control. The integrity, efficiency and effectiveness of the new safety risk controls need to be verified under real operating conditions.
- 7.9. The results of safety risk management shall be documented. This should include hazards and any consequences, the safety risk assessment and all measures taken to control the risks (mitigations). Documentation of safety risk management (SRM) becomes a basic source of institutional safety knowledge that can be used as a reference when making safety decisions and exchanging and sharing safety information.

8. NON-EXHAUSTIVE LIST OF HAZARDS

- 8.1 Early analysis of the process to be followed to return to service a significant number of aircraft to service will lead to the identification of hazards and related risks for which mitigation strategies can be defined upfront. The risks entitled such hazards can only be assessed by each organisation. A non-exhaustive list of hazards is provided below:
- a) Aircraft storage
 - i. Aircraft not (or not fully) stored in accordance with ICA and storage procedures.
 - ii. Aircraft stored at aerodromes where only minimal maintenance services are available.
 - iii. Robbery of spare parts from one aircraft for use on another aircraft.
 - iv. Effects of environmental during aircraft storage (e.g., humidity, salt, dust, ashes, etc.).
 - b) Personnel
 - i. Absence of key personnel.
 - ii. Commercial or time pressure affecting human performance.
 - c) Procedures
 - i. Aircraft not preserved/protected fully in accordance with storage procedures.

- ii. Inappropriate decision-making in unknown situations (the organisations/teams may face situations that are not addressed in the procedures approved by the existing organisation) and are subject to changes.
 - iii. Staff with limited experience in storage procedures.
 - iv. COVID-19 health recommendation poses restrictions on group activities.
 - v. Aircraft returning to operation with overdue maintenance.
- d) Service from suppliers
- i. Suppliers not delivering on time or in the quantity required or with the quality expected.
 - ii. MRO tools and equipment not serviceable (e.g. MRO tool calibrations expired or tools corroded due to lack of use without adequate protection).

9. SAFETY ASSURANCE

- 9.1. The restrictions brought about by COVID-19 have led to dynamic changes in the provision of services, in air operations and civil aviation systems of States.
- 9.2. These changes may affect the effectiveness of existing safety risk controls of service providers. In addition, new hazards and related safety risks may be inadvertently introduced into an operation when changes occur. Hazards shall be identified and related safety risks assessed and controlled, as defined in the service providers' existing hazard identification and SRM procedures.
- 9.3. In this context, the operator interacting with the MRO will identify the element triggering the formal process of change. The following are some elements that may trigger the aforementioned process:
- a) introduction of new technologies or equipment;
 - b) changes in the operational environment;
 - c) changes in key personnel;
 - d) significant changes in staffing levels;
 - e) changes in safety regulatory requirements;
 - f) significant restructuring of the organisation; and
 - g) physical changes (new facilities) or changes in the general layout of the organisation.
- 9.4. Based on these triggers, the operator will identify the new hazards and risks introduced into its organisation by COVID-19. It will also coordinate with the MROs that provide it with maintenance services, the sharing of safety data and information regarding failures, defects and malfunctions that have been identified and that are related to the maintenance services carried out by the MRO. The sharing of this safety data and information will allow the operator to identify new hazards and risks and to establish corresponding mitigation actions to reduce risk to an acceptable level.
- 9.5. The operator will also consider the consequences of change on its personnel. This may affect the way in which the individuals concerned accept the change. Early communication and participation will usually improve the way changes are perceived and implemented.
- 9.6. In order for the operator to return to service aircraft that were in storage during the COVID-19 pandemic, it may be necessary to obtain the appropriate authorisation from the CAA for certain flexibilities, such as: extensions in the calibration dates of the tools used by the MRO, deferral of maintenance tasks until the end of the storage period, deferral of a calendar change until the return to service of the aircraft (this applies to ADs), among others.
- 9.7. The above items are regulatory requirements that will be covered by the procedures developed in the Maintenance Control Manual (MCM) or Maintenance Organisation Manual (MOM), as appropriate (approved by the accountable manager and accepted by the certifying CAA). Therefore, in order for the operator or MRO to operate with extended procedures, an application for a temporary exemption or deviation must be submitted to the CAA for the duration of the COVID-19 pandemic.

10. PROCESS FOR ACCEPTANCE OF EXEMPTIONS OR DEVIATIONS FROM SERVICE PROVIDERS' MANUALS (MCM OR MOM)

10.1. Initial analysis of risks due to changes brought about by COVID-19

- a) The systematic hazard identification processes contained in the organisation's manuals will allow it to make an appropriate initial risk analysis (hazard identification, risk assessment and risk mitigation) with respect to the changes caused by COVID-19.
- b) Given the dynamic change in maintenance services and air operations brought about by the pandemic, the operator and the MRO will continuously update or amend their risk management processes, with particular emphasis on the transition from restricted operations during the pandemic to unrestricted normal operations, due to the dramatic change that the civil aviation system will undergo.
- c) It is important to understand the size and complexity of the operator's and MRO's operation in each of the phases generated by the pandemic in order to achieve high safety performance. It is also important that the operator and the MRO define the description of their systems and their interfaces and interactions so that personnel are aware of, and fulfil, their safety management roles and responsibilities. The following are the phases that have been identified in relation to the management of risks and extensions during and after the pandemic:
 - 1) **during the pandemic:** Period covering operations carried out while exemptions from the requirements are in force, the renovation of which will be subject to the evolution of the COVID-19 disease, the physical restrictions in force, whether total or moderate, and the health protocols for controlling the spread of the disease. This stage is directly governed by the evolution of the pandemic and the development of measures to combat its spread.
 - 2) **before starting normal operations:** Period in which it is anticipated that physical and health restrictions will be lifted and make way for normal operations.
 - 3) **during the first months of normal operations:** Period in which all exemptions will be eliminated and the currency or validity of certificates, licences, authorisations, qualifications and other approvals that have been extended will be re-established. During normal operations, the AMO will operate without physical or health restrictions.

10.2. Submission of the request for amendments to the MCM and/or MOM

- a) Once the operator and the MRO have identified the hazards and their potential consequences, the organisations will develop the risk and extension management matrix, setting out the potential mitigations and operational conditions to be implemented during the pandemic, before starting normal operations and in the first months of normal operations.
- b) The operator or the MRO will then submit the application for exemption or diversion to the local CAA that granted the certification, in the form and manner established in the national regulations. As attachments to the application, the operator or MRO will submit the corresponding risk analysis and revision to the MCM or MOM, as appropriate, with the changes made.
- c) Only when the CAA has authorised the exemption or diversion, may the operator or the MRO implement the procedures that have been requested to be eased.
- d) If a service provider has approvals from other States, it will also seek appropriate exemptions or deviations from the CAAs of those States in compliance with the requirements under which those States granted the certification. Only then may maintenance be carried out on the aircraft of those States of Registry.

10.3. Acceptance of amendments to the MCM and MOM by the local CAA

- a) At the time of submission of the request for exemption, the operator or the MRO will also submit the revision of the relevant manual with the changes made, which may be submitted as an appendix to said manual.
- b) If an operator or a MRO has approvals from other States, it shall send a copy of the document accepted by the local CAA to the CAAs of those States in order to obtain acceptance of the document by those CAAs.

10.4. Training of operator and MRO staff on amendments to manuals

Upon receipt of acceptance of the MCM or MOM by the local CAA, the operator's or the MRO's training department or section must proceed to train the organisation's personnel in the revised and developed procedures to ensure their implementation. It is important that staff receive training so that they may adapt to their assigned tasks and responsibilities.

10.5. Training records

The person responsible for the training of the operator's or MRO's staff should keep detailed records to demonstrate that the personnel received appropriate training in the revisions made.

11. ASPECTS THAT COULD BE SUBJECT TO EXEMPTIONS OR DEVIATIONS

11.1. Changes in the organisation

The operator and the MRO can make the following changes on an agreed date accepted by the CAA and report them by virtual media:

- a) changes due to a decrease in the number of declared staff. These changes will result in a reduction in the activity of the service provider, proportional to the reduction in staff. The operator or MRO shall demonstrate in the man-hour plan that the remaining number of personnel is sufficient for the organisation's workload during the reduction period.
- b) interruption of activity in some line stations;
- c) complete cessation of the activity of the AMO supporting the operator for a period of less than 90 consecutive days.
- d) other changes listed in LAR 145.155 - Changes in the MRO to be reported, will be notified to the principal maintenance inspector (PMI). This includes, for example, changes in the designated individuals, or if the AMO has to stop all activities completely for a period longer than 90 days.

11.2. Extension of the calibration date

11.2.1. MROs providing maintenance services to the operator may extend the calibration expiration date for tools with a calibration expiration date between 1 March 2020 and 30 August 2020, which cannot be sent for calibration to an approved laboratory due to the COVID 19 crisis and which are used to provide maintenance to operators. Extensions will be granted by the CAA on a case-by-case basis and according to the following conditions:

- a) when the normal calibration period is \leq 12 months, the calibration extension can be up to a maximum of 10% of the normal calibration;
- b) when the calibration period is $>$ 12 months, the extension of the calibration can be 10% of the normal calibration period up to a maximum of 3 months;
- c) the MRO has identified that the risk associated with the use of the tool for the specific task in relation to the continuing airworthiness of the aircraft, product or component, is "tolerable";
- d) the tool is inspected before use and no damage or corrosion is identified;

- e) the tool was used at least once within 3 months before the calibration expiration date;
- f) no deficiency in the use of this tool has been reported since the last calibration; and
- g) the last two calibration results do not show any possible problems (e.g. drift in the value, value too close to the acceptable limit, etc.) which could jeopardise maintenance.

11.2.2. Where the organisation has identified that the risk associated with the use of the tool is "not tolerable", the organisation must receive acceptance of the extension from the tool manufacturer (except alternative tools) and the CAA and must take additional measures to verify and ensure the correct maintenance and continuing airworthiness outcome of the aircraft, product or component, such as: verification of tool service (e.g., using a calibrated master torque tester) or verification of measurement / test / job result by comparison or other acceptable means.

11.3. Deferral of a scheduled task until after return to service

11.3.1. If a scheduled task needs to be postponed to a date after the aircraft's return to service and beyond what is permitted by the maintenance programme (MP), the aircraft owner must receive advice from the design approval holder on such deferral and post-compliance expiration date.

11.3.2. The applicant must then submit this deferral, together with the proposed technical justification, including (if applicable) a risk assessment, to the CAA for approval.

11.3.3. The CAA will consider the following conditions, mitigating factors or other elements deemed necessary by the CAA, when permitting the deferral of a scheduled date until after return to service:

- a MRO hired by the operator to carry out maintenance has implemented appropriate parking / storage procedures throughout the period.
- The owner or operator has monitored the MP tasks to be performed (what maintenance is required, when it has to be performed, by whom and to what standard to ensure the continuing airworthiness of the aircraft).
- This does not apply to mandatory continuing airworthiness information (MCAI), such as AD tasks.
- The environmental conditions where the aircraft was parked/stored have been taken into account.

11.3.4. Certain scheduled tasks may be more relevant to a particular storage environment, for example: wet and salty conditions spread corrosion.

11.3.5. Also, the importance of the maintenance task (e.g., based on the type of task of the Maintenance Review Board (MRB)/source/category, reliability alert tasks), the performance of the quality system, risk assessments conducted by the applicant.

11.3.6. Based on the above elements, the CAA could allow an exceptional (one-off) deferral, which should not exceed:

- (i) MP task interval of 1 year or less: up to 3 months
- (ii) MP task interval of more than 1 year, but not more than 2 years: up to 4 months
- (iii) MP task interval of more than 2 years, but not more than 3 years: up to 5 months
- (iv) MP task interval of more than 3 years: up to 6 months.

11.3.7. Such deferral must be calculated from the due date of the original MP task, unless otherwise agreed with the relevant authority.

11.3.8. The aircraft continuing airworthiness recording system and, if applicable, the aircraft technical logging system must properly record such agreement and the effective date of compliance.

12. MANAGEMENT OF DEVIATIONS

12.1. Implementation of mitigations

Once the CAA has authorised the easing (exemptions or deviations), the operator and the MRO must monitor the processes to ensure that no new hazards are generated. If this is the case, a new risk analysis shall be carried out and the new mitigations to be implemented shall be identified.

12.2. Operational considerations during the pandemic

Operational considerations during the pandemic will allow the operator to verify the appropriateness of mitigation measures and identify new hazards. In addition, the application of barriers and the measurement of safety performance will ensure the effectiveness of risk controls being implemented during the pandemic.

All results obtained shall be documented as part of safety risk management (hazards, consequences, risk assessment and all measures taken to control those risks).

The documentation thus obtained will provide a basic source of knowledge on safety and can be used as a reference for decision-making and for sharing with other organisations.

Another important aspect is that all the information will provide material for trend analysis and enable the operator to make data-based decisions.

In order to determine whether the operator, in coordination with the MRO, is able to return the aircraft to service from storage, it will carry out a risk analysis and if it is determined that a risk may be generated, which cannot be mitigated, the return to service of the stored aircraft shall be suspended and the CAA shall be informed.

It should be noted that the critical processes during this period may change according to how the pandemic evolves (resurgence).

12.3. Operational considerations before starting normal operations

Once the CAA has established the date in which normal activities can be resumed, the operator will develop a **recovery plan** defining all the activities required to resume normal operations in an orderly and safe manner. This plan will be submitted to the CAA for acceptance and oversight.

Among the main activities, the operator will immediately start reviewing the MCM to determine which procedures could be removed or which procedures may be improved. Once this task has been completed, it shall coordinate with the PMI, through virtual meetings, the topics that will be modified in the manual in order to properly coordinate the acceptance of the MCM by the local CAA.

Once the MCM has been accepted, operator personnel and the AMO providing maintenance service must be trained to ensure that all operator personnel and the AMO are aware of and understand the changes.

The **recovery plan** will contain a sequential task plan, indicating the time expected to be devoted to each of the different tasks or activities over a given period of time, specifying the different exemptions and the activities to be carried out to resume normal operations in accordance with the associated requirements. Accordingly, it is recommended that a Gantt chart be developed as an appendix to the recovery plan. A sample Gantt chart is provided in [Appendix C](#).

In order to ensure that the **recovery plan** contains all the activities required for the operator to resume normal operations without any difficulties, the operator will conduct a self-assessment to determine its status, especially concerning those processes that have been affected by the exemptions granted as a result of the changes brought about by COVID-19.

12.4. Operational considerations upon restart of normal operations

When starting normal operations, the operator will implement the **recovery plan** to restore the exemptions granted, in an orderly and safe manner. The plan will be implemented in accordance with the established schedule accepted by the CAA.

Once all extensions have been restored, the operator will conduct a new self-assessment of the processes being carried out, in order to determine if certification standards continue to be met.

13. RECOVERY PLAN

13.1. Content

The recovery plan will be a document submitted by the operator, signed by the accountable director, that defines how the organisation will resume normal activities. This document must be aligned with the recovery of the processes that are necessary for the normal operation of the operator; accordingly, it includes all the operational aspects to restore those processes.

There are different ways to approach the development of a recovery plan, but it must always be aligned with the operator's business continuity plan in normal operations. Accordingly, the elements that define the operator's reason for being must be considered.

The recovery plan must describe its objective, scope, the requirements that were subject to extension, recovery activities, responsible parties, safety risk management, taking into account the evolutionary change towards normal operations, control and monitoring processes, and estimated duration.

The recovery plan will also include criteria for determining when a safety problem cannot be resolved using the normal procedures that diminish the ability of organisations to carry out essential processes.

13.2. Format

The operator is expected to develop a recovery plan that contains at least the following sections:

- a) introduction;
- b) objective;
- c) scope;
- d) description of the requirements that were subject to exemption;
- e) description of recovery activities, with start and end dates;
- f) responsible parties;
- g) resources required;
- h) safety risk management;
- i) control and monitoring;
- j) operation of the continuing airworthiness department under conditions of non-normal procedures; and
- k) Gantt chart (appendix).

Note: Items (e) and (f) must be part of an implementation plan (Gantt), with estimated dates and signed by the accountable manager. Whenever a deadline is not met, the plan must be revised and updated, and signed by the accountable manager for acceptance by the principal maintenance inspector.

14. BACK TO NORMAL

- 14.1. Once the maintenance activities are stabilised following the COVID-19 pandemic, the operator will assess the risk associated to the use of the concessions granted, with particular attention to the risk associated with cases where maintenance personnel may not have worked in the maintenance environment for a long time and any other possible effect of the COVID-19 crisis on human factors.

14.2. This AC is a temporary measure and will be valid until 31 March 2021 or until normal operations are resumed, whichever occurs first.

15. EXAMPLES OF MATRICES AND TABLES FOR MANAGING RISKS AND EXTENSIONS GRANTED

15.1. **Appendix A** contains examples of risk management matrices, so that the operator can have a reference in developing its own risk analyses and in establishing the operational considerations that should be observed in each identified phase. The risk analyses will be submitted to the CAA along with the request it may deem necessary, in accordance with CAA regulatory requirements.

15.2. **Appendix B** shows examples of likelihood and severity tables and risk assessment matrices. However, the CAA will provide guidance to its service providers on the use of the risk assessment methodology adopted by the State.

15.3. **Appendix C** contains an example of a Gantt chart of the recovery plan.

APPENDIX A

Example of risk management matrix for the return to service of aircraft from storage due to COVID-19

Process	Examples of hazards	Examples of possible consequences	Examples of risk index	Examples of possible mitigation measures	Operational considerations during the contingency	Considerations before resuming normal service	Operational considerations during the first months of normal service
Conservation of the aircraft's fuel tanks and engine	<ul style="list-style-type: none"> Contamination of fuel tanks. Contamination of engines. 	<ul style="list-style-type: none"> Lack of engine power. In-flight shut down (IFSD). Emergency landing. System/component failure or malfunction (powerplant) (SCF – PP): <ul style="list-style-type: none"> Engine - inflight. Engine – on ground. SCF-NP / SCF-PP accidents: <ul style="list-style-type: none"> Aircraft or equipment destroyed Aircraft with structural damage or breaks. With no fatalities. With fatalities. Serious injuries. 	<p>With no mitigations 4A</p> <p>Occasional: 4 Catastrophic: A</p> <p>With mitigations 3D</p> <p>Remote: 3 Minor: D</p>	<ul style="list-style-type: none"> Fuel tanks must be sealed to prevent fuel caps from opening. <i>Note: Fuel tanks should be filled to prevent moisture condensation inside the tank.</i> Special care should be taken to prevent moisture in engines, so a moisture-absorbing material should be used. Contamination fuel testing for bacteria, fungi and mould. Avoid refuelling from cans and drums. Establish as RII the sampling of fuel and engine oil before returning to service for having been stored as a result of COVID-19. 	<ul style="list-style-type: none"> Keep a record of all problems that arise as a result of the aircraft fuel system or engine. Conduct a risk analysis in order to take further mitigation measures. Keep a record of the results of the laboratories responsible for testing the fuel and engine oil. Purge fuel through the drains. Visual testing of purged fuel. Report problems related to failures, malfunctions or defects resulting from the fuel system and/or engine to the CAA. 	<ul style="list-style-type: none"> Inform the CAA of the return of the aircraft to service. Conduct a pre-flight fuel test. Depending on the magnitude of the change, perform a new risk analysis. Include in the SMS the indicators that are necessary to control and mitigate the hazards that generate risks. Coordinate with the CAA and submit the recovery plan for its acceptance, in order to resume all maintenance activities in an orderly and safe manner. 	<ul style="list-style-type: none"> Keep a record of all failures, malfunctions or defects caused by the fuel system or engine. Implement the recovery plan, as accepted by the CAA. Capitalise on experiences gained during the pandemic period and establish which procedures may remain and be applied. Validate the results of the activities carried out by means of audits (remote and desktop or face-to-face) on the processes carried out. Share the information with other operators.
Compliance with the maintenance programme	<ul style="list-style-type: none"> Failure to change a component with a scheduled expiration. Lack of or inadequate compliance with the MCAI (mandatory continuing airworthiness information) Lack of, or deficient, compliance with maintenance jobs (inspection, in-process inspection, 	<ul style="list-style-type: none"> Aircraft, engine or propeller failures (where applicable) not classified as accidents. System/component failure or malfunction (non-powerplant) (SCF-NP). <ul style="list-style-type: none"> False fire or overheating alarm Of flight controls Of windshield / window / door Of landing gear Unintentional/explosive decompression 	<p>With no mitigations 4A</p> <p>Occasional: 4 Catastrophic: A</p> <p>With mitigations 3D</p> <p>Remote: 3 Minor: D</p>	<ul style="list-style-type: none"> Implement an audit programme for stored aircraft to ensure that all required tasks are verified and fulfilled. Establish agreements with other organisations in order to be able to obtain material to comply with the preservation of the aircraft. Establish agreements with other organisations in order to obtain the tools to carry out the necessary work. Schedule specific inspections of potentially affected areas. 	<ul style="list-style-type: none"> Components that are easy to remove inside the aircraft such as life jackets or first aid kits and those that have an expiration date, such as oxygen tanks, are removed and stored to keep them under control. Batteries and magnetic detectors are also removed and stored. Establish additional maintenance (cleaning and lubrication) on necessary parts that have not been effectively protected as recommended (e.g., lack of available covers and 	<ul style="list-style-type: none"> Depending on the magnitude of the change, perform a new risk analysis. Include in the SMS the indicators that are necessary to control and mitigate the hazards that generate risks. Coordinate with the CAA and submit for its acceptance the recovery plan to restore all maintenance activities in an orderly and safe manner. 	<ul style="list-style-type: none"> Implement the recovery plan, as accepted by the CAA. Capitalise on experiences gained during the pandemic period and establish which procedures may remain and be applied. Validate the results of the activities carried out through remote and desktop or face-to-face audits on the processes carried out. Share the information with other operators.

Process	Examples of hazards	Examples of possible consequences	Examples of risk index	Examples of possible mitigation measures	Operational considerations during the contingency	Considerations before resuming normal service	Operational considerations during the first months of normal service
	<p>certification of compliance).</p> <ul style="list-style-type: none"> - Incorrect or inappropriate use of tools for the task. - Lack of availability of parts and materials necessary to carry out aircraft maintenance. - Lack of tools and equipment needed to perform maintenance. - Lack of materials and inputs to carry out the work. - Unavailability of maintenance data, inaccurate data or work order transcription errors. 	<ul style="list-style-type: none"> • Tyre burst • Structural failure • Loss of component - inflight • Loss of component - ground • Contamination of aircraft fuel and/or fluids. • Fuel leaks - System/component failure or malfunction (powerplant) (SCF-PP) <ul style="list-style-type: none"> • Of engine – inflight • Of engine - ground • Of propeller • Of rotor • Overheating 		<ul style="list-style-type: none"> - Contact the aircraft/engine type certificate (TC) holder to find out if additional maintenance is required before the aircraft goes into service and share any relevant findings during inspections. - Encourage all staff to report unknown problems or situations and not to act on their own. - Assign competent persons to assess the changing circumstances, analysing the impact on aircraft safety. Task certification personnel to assess aircraft defects, when not addressed in the MEL. - Review published guides and recommendations to address the COVID-19 pandemic scenario. When necessary, discuss special situations with the CAA. - Provide staff with updated information on procedures through training. - Develop brochures and share them repeatedly with staff. - Prepare checklists when necessary. - Apply the principles of "just culture". - Consider which tasks/activities may be affected by health recommendations and plan accordingly (e.g. establish isolated teams working in shifts or remotely (if this does not affect the 	<p>possibility of insect/bird nesting); perform fuel contamination analysis; assess the condition of batteries; etc.</p> <ul style="list-style-type: none"> - There is no exception to compliance with mandatory continuing airworthiness information (MCAI), such as AD tasks. - Take into account certain scheduled compliance tasks that may be more relevant to a particular storage environment, for example: wet and salty conditions spread corrosion. - Consider the importance of the maintenance programme task (e.g. based on MRB task type / source / category, reliability alert task), the performance of the quality system and, if appropriate, review the risk assessment. - Based on the above elements, it may be possible for the CAA to allow an exceptional (one-off) deferral, which does not exceed: <ul style="list-style-type: none"> (i) MP task interval of 1 year or less: up to 3 months (ii) MP task interval of more than 1 year, but not more than 2 years: up to 4 months (iii) MP task interval of more than 2 years, but 		

Process	Examples of hazards	Examples of possible consequences	Examples of risk index	Examples of possible mitigation measures	Operational considerations during the contingency	Considerations before resuming normal service	Operational considerations during the first months of normal service
				<p>effectiveness of the work), while ensuring an adequate and timely flow of information).</p> <ul style="list-style-type: none"> - Review the ADs, including any ADs that may have been issued since the aircraft was stored. - If, exceptionally, an MP scheduled task needs to be deferred until after return to service and beyond the variation permitted by the MP, the aircraft owner or the person responsible for continuing airworthiness must receive advice from the TC holder or design approval holder on such deferral and subsequent expiration date. The applicant must then submit this deferral, together with the proposed technical justification, including, if appropriate, a risk assessment, to the CAA for approval. 	<p>not more than 3 years: up to 5 months</p> <p>(iv) MP task interval over 3 years: up to 6 months.</p> <p>Such deferral must be calculated from the due date of the original MP task, unless otherwise agreed with the competent authority.</p> <ul style="list-style-type: none"> - The later expiration date must also be part of the CAA approval. - The aircraft's continuing airworthiness registration system and, if applicable, the aircraft's technical log system must record according to the effective date of compliance. - Communicate with the aircraft/engine TC holder to decide if additional maintenance is required before the aircraft is released to service and share any relevant findings of inspections. 		
Management of change	<ul style="list-style-type: none"> - Effects of the COVID-19 pandemic on the health of maintenance personnel - Maintenance personnel are not in a healthy condition. - Stress of staff. 	<ul style="list-style-type: none"> - Decrease in the emotional, psychological and social conditions of maintenance staff - Mechanical failures as a result of maintenance, which could cause accidents or serious incidents. 	<p>With no mitigations</p> <p>5A</p> <p>Frequent: 5 Catastrophic: A</p> <p>With mitigations</p> <p>3D</p> <p>Remote: 3 Minor: D</p>	<p>See CA-AIR-145-003 - Management of risks applicable to the extension of the currency or continuous validation of the LAR 145 approved maintenance organisation (AMO) certificate due to changes caused by COVID-19.</p> <ul style="list-style-type: none"> - Develop a procedure to prevent the spread of COVID-19 if an employee becomes ill. 	<p>See CA-AIR-145-003 - Management of risks applicable to the extension of the currency or continuous validation of the LAR 145 approved maintenance organisation (AMO) certificate due to changes caused by COVID-19</p> <ul style="list-style-type: none"> - Maintain an up-to-date list of staff health checks (e.g. body temperature). - Establish weekly or bi-weekly sampling to rule 	<p>See CA-AIR-145-003 - Management of risks applicable to the extension of the currency or continuous validation of the LAR 145 approved maintenance organisation (AMO) certificate due to changes caused by COVID-19</p> <ul style="list-style-type: none"> - Depending on the magnitude of the change, perform a new risk analysis. 	<p>See CA-AIR-145-003 - Management of risks applicable to the extension of the currency or continuous validation of the LAR 145 approved maintenance organisation (AMO) certificate due to changes caused by COVID-19</p> <ul style="list-style-type: none"> - Implement the recovery plan, as accepted by the CAA. - Capitalise on experiences gained

Process	Examples of hazards	Examples of possible consequences	Examples of risk index	Examples of possible mitigation measures	Operational considerations during the contingency	Considerations before resuming normal service	Operational considerations during the first months of normal service
	<ul style="list-style-type: none"> - Work overload due to reduced staffing as a result of isolation. - Increase in errors by maintenance personnel during jobs. 	<ul style="list-style-type: none"> - Aircraft, engine or propeller failures (where applicable) not classified as accidents. - System/component failure or malfunction (non-powerplant) (SCF-NP) <ul style="list-style-type: none"> • False fire or overheating alarm • Of flight controls • Of windshield / window / door • Of landing gear • Unintentional/explosive decompression • Tyre burst • Structural failure • Loss of component - inflight • Loss of component - ground • Fuel leaks - System/component failure or malfunction (powerplant) (SCF-PP) <ul style="list-style-type: none"> • Engine failure - inflight • Engine failure - ground • Of propeller • Of rotor • Overheating • In-flight loss of control due to failure of flight control systems. 		<ul style="list-style-type: none"> - Provide information on who to contact if employees become ill. - Implement policies of support and flexibility in the face of employees' medical incapacities. - Provide employees with accurate information about COVID-19, its symptoms, how it is transmitted and risk of exposure. - Provide training on COVID-19, including proper hand washing and other infection control precautions, such as maintaining a distance of at least 1.5 metres. - Provide employees with appropriate personal protective equipment (PPE) and also provide training in its use. - Establish procedures that require PPE to be disposed of after use in a location assigned for the disposal of contaminated material. - Provide employees with soap, clean water and hand drying materials or hand sanitizers at the work site. - Provide garbage cans with devices that avoid touching them by hand when opening them. - Put up posters that encourage employees to stay home if they are sick, to follow cough and sneeze etiquette and proper hand hygiene. 	<ul style="list-style-type: none"> out infection by COVID-19 among the staff. - Constant monitoring to ensure that all staff follow the recommendations to prevent COVID-19 and use the material (PPE) to prevent infection. - Following the principles of a just culture, apply corrective measures to personnel who deliberately do not follow the rules and do not use the established equipment for maintenance jobs. - Frequent cleaning of work areas, maintenance shops, employee dining rooms, bathroom and locker areas, break rooms and other common areas. - Follow-up on reported medical cases by the human resources department. - Regular prevention talks with mental health specialists. - Regular talks on safety at work, stress, management of emotions and psychological and social conditions in times of the COVID-19 crisis. - Permanent supervision of staff to detect signs of mental health deterioration. 	<ul style="list-style-type: none"> - Include in the SMS the indicators that are necessary to control and mitigate the hazards that generate risks. - Coordinate with the CAA and submit the recovery plan for its acceptance, in order to restore all maintenance activities in an orderly and safe manner. 	<ul style="list-style-type: none"> during the pandemic period and establish which procedures may remain and be applied. - Validate the results of the activities carried out through remote and desktop or face-to-face audits on the processes carried out. - Share the information with other operators.

Process	Examples of hazards	Examples of possible consequences	Examples of risk index	Examples of possible mitigation measures	Operational considerations during the contingency	Considerations before resuming normal service	Operational considerations during the first months of normal service
				<ul style="list-style-type: none"> - Regular testing of staff for COVID-19. - Relaunch awareness campaigns about human error in maintenance, with emphasis on incorrect installation of parts. - Apply the principles of "just culture". - Identify high-risk individuals or groups. - Individualised monitoring by human resources. - Improvements in the organisation's internal communication. - Monitor staff for signs of deteriorating mental health. - Provide immediate treatment in the event that maintenance personnel with diminished mental health are detected. - Development, publication and implementation of guidance on mental health. - Implement the health measures established by the State. 			
<p>Access to information, technical data</p>	<ul style="list-style-type: none"> - Lack of remote access to aircraft information. - Lack of access to information on continuing airworthiness (ICA, for example: aircraft maintenance manual (AMM), structural repair manual (SRM), wiring diagram 	<ul style="list-style-type: none"> - Mechanical failures as a result of maintenance, which could cause accidents or serious incidents. - Aircraft, engine or propeller failures (where applicable) not classified as accidents. - System/component failure or malfunction (non-powerplant) (SCF-NP) 	<p>With no mitigations 5A Frequent: 5 Catastrophic: A</p> <p>With mitigations 3D Remote: 3 Minor: D</p>	<ul style="list-style-type: none"> - Make available to maintenance personnel portable devices with updated maintenance data. - Train staff in the use of digital media. - Increase monitoring of the use of maintenance data and undertake staff awareness campaigns on the subject. - Contract with an internet service provider that 	<ul style="list-style-type: none"> - Perform maintenance at all times with technical information either on paper (updated for each job) or through portable devices. - Ensure that all staff are knowledgeable in the use of digital media. - Develop procedures to guide staff in the use of information through digital media. 	<ul style="list-style-type: none"> - Depending on the magnitude of the change, perform a new risk analysis. - Include in the SMS the indicators that are necessary to control and mitigate the hazards that generate risks. - Coordinate with the CAA and submit for its acceptance the recovery plan to restore all maintenance activities 	<ul style="list-style-type: none"> - Implement the recovery plan, as accepted by the CAA. - Capitalise on experiences gained during the pandemic period and establish which procedures may remain and be applied. - Validate the results of the activities carried out through remote and desktop or face-to-face

Process	Examples of hazards	Examples of possible consequences	Examples of risk index	Examples of possible mitigation measures	Operational considerations during the contingency	Considerations before resuming normal service	Operational considerations during the first months of normal service
	<p>manual (WDM), etc.).</p> <ul style="list-style-type: none"> - Impossibility of carrying out an analysis of the applicability of an AD. - Work on aircraft done with outdated information. - Impossibility of accessing job programming. - Difficulties for communicating within the organisation and with other organisations. - Lack of information technology resources to carry out virtual meetings. 	<ul style="list-style-type: none"> • False fire or overheating alarm • Of flight controls • Of windshield/ window/door • Of landing gear • Unintentional/explosive decompression • Tyre burst • Structural failure • Loss of component - inflight • Loss of component - ground • Fuel leaks - System/component failure or malfunction (powerplant) (SCF-PP) <ul style="list-style-type: none"> • Engine failure - inflight • Engine failure – on ground • Of propeller • Or rotor • Overheating • In-flight loss of control due to failure of flight control systems. 		<p>provides good satellite broadband.</p> <ul style="list-style-type: none"> - Consider portable internet devices. - Use, and train staff in the use of, applications that allow teleconferencing, such as Microsoft Teams, Zoom, GoToMeeting, Skype, etc. 	<ul style="list-style-type: none"> - Train staff in applicable procedures. 	<p>in an orderly and safe manner.</p>	<p>audits on the processes carried out.</p> <ul style="list-style-type: none"> - Share the information with other operators.
<p>Implementation of procedures</p>	<ul style="list-style-type: none"> - Lack of continuing compliance with procedures for the return to service of a stored aircraft. - Failure to update the procedure. - Absence of personnel established in the procedure (in 	<ul style="list-style-type: none"> - Aircraft, engine or propeller failures (where applicable) not classified as accidents. - System/component failure or malfunction (non powerplant) (SCF-NP) <ul style="list-style-type: none"> • False fire or overheating alarm 	<p>With no mitigations 5A Frequent: 5 Catastrophic: A With mitigations 3D</p>	<ul style="list-style-type: none"> - Schedule additional maintenance, e.g.: cleaning and lubricating necessary components that have not been effectively protected as recommended (for example, lack of available covers and possibility of insect/bird nesting); performing fuel 	<ul style="list-style-type: none"> - Perform additional maintenance as scheduled. - Contact the aircraft/engine TC holder to decide if additional maintenance is required before the aircraft is released to service and share any relevant findings of the inspections. 	<ul style="list-style-type: none"> - Depending on the magnitude of the change, perform a new risk analysis. - Include in the SMS the indicators that are necessary to control and mitigate the hazards that generate risks. - Coordinate with the CAA and submit for its 	<ul style="list-style-type: none"> - Implement the recovery plan, as accepted by the CAA. - Capitalise on experiences gained during the pandemic period and establish which procedures may remain and be applied. - Validate the results of the activities carried out

Process	Examples of hazards	Examples of possible consequences	Examples of risk index	Examples of possible mitigation measures	Operational considerations during the contingency	Considerations before resuming normal service	Operational considerations during the first months of normal service
	<p>particular personnel designated to make decisions as supervisors and certifiers) and understanding of their roles and responsibilities.</p>	<ul style="list-style-type: none"> • Of flight controls • Of windshield /window/door • Of landing gear • Unintentional/explosive decompression • Tyre burst • Structural failure • Loss of component - inflight • Loss of component - ground • Fuel leaks - System/component failure or malfunction (powerplant) (SCF-PP) <ul style="list-style-type: none"> • Engine failure - inflight • Engine failure - ground • Of propeller • Of rotor • Overheating - Loss of control inflight due to failures in flight control systems. 	<p>Remote: 3 Minor: D</p>	<p>contamination analysis; assessing the condition of batteries; etc.</p> <ul style="list-style-type: none"> - Consider specific inspections for potentially affected areas. - Implement procedures for the AMO or operator to operate with the identified changes as approved by the AMO accountable manager, operator or aircraft owner, and have these procedures incorporated into the manual or corresponding document through temporary amendments. - Implement audit activities remotely and through desktop activities, using information and communication technologies. - Nominate as soon as possible the appropriate representatives for the different activities and record the decisions taken, so that in case of doubt they can be confirmed at a later stage. This must be coordinated with the CAA. - Appoint a dedicated team of experts with experience to be responsible for making decisions in a changing scenario. Communicate decisions to the affected people and record them. - Assign competent persons to assess the changing circumstances, analysing the impact on aircraft safety; and task 	<ul style="list-style-type: none"> - Revise manuals and/or documents to introduce changes as necessary (change management). - Maintain ongoing coordination with the CAA PMI assigned to the AMO or the operator, as appropriate. - Conduct remote audits to verify compliance with procedures. - Staff must report problems or unknown situations and not act on their own. 	<p>acceptance the recovery plan to restore all maintenance activities in an orderly and safe manner.</p>	<p>through remote and desktop or face-to-face audits on the processes carried out.</p> <ul style="list-style-type: none"> - Share the information with other operators.

Process	Examples of hazards	Examples of possible consequences	Examples of risk index	Examples of possible mitigation measures	Operational considerations during the contingency	Considerations before resuming normal service	Operational considerations during the first months of normal service
				certification personnel to assess aircraft defects, when not addressed in the MEL. - Review published guidelines and recommendations to address the COVID-19 pandemic scenario. When necessary, special situations shall be discussed with the CAA.			
Aircraft storage	<ul style="list-style-type: none"> - Aircraft not (or partially) stored in accordance with storage procedures and instructions for continuing airworthiness (ICA). - Aircraft stored at aerodromes where only minimal maintenance services are available. - Subtraction of aircraft components (loss of components due to subtraction by third parties). - Environmental effects during aircraft storage (e.g. humidity, salt, dust, ash, etc.). 	<ul style="list-style-type: none"> - System/component failure or malfunction – non powerplant) (SCF-NP) <ul style="list-style-type: none"> • False fire or overheating alarm • Of flight controls • Of windshield/window/door • Of landing gear • Unintentional/explosive decompression • Tyre burst • Structural failure • Loss of component - inflight • Loss of component - ground • Fuel leaks - System/component failure or malfunction (powerplant) (SCF-PP) <ul style="list-style-type: none"> • Engine failure - inflight • Engine failure - ground • Of propeller • Of rotor 	<p>With no mitigations 5A Frequent: 5 Catastrophic: A</p> <p>With mitigations 3D Remote: 3 Minor: D</p>	<ul style="list-style-type: none"> - Group aircraft of the same type and stored under the same conditions (it is expected that similar aircraft types stored at the same time and in the same environment will behave in the same way as those sampled) and consider carrying out, with the support of the type certificate holder where necessary, additional physical inspection of the aircraft and ground testing on the first 20% (at least 2) of the aircraft in each group. Ground tests must cover tasks such as engine operation, flight control operation and braking/steering tests. - Assess the need for flight checks on the first 10% of the fleet (at least 1 aircraft) in each group. - Send additional maintenance personnel to the remote location, including the need for tools, facilities, documentation and spare parts. 	<ul style="list-style-type: none"> - Inform the TC holder and CAA of any unexpected findings during the additional inspections and tests, to contribute to the improvement of the TC holder's recommended practices. - Plan ground checks of affected aircraft systems as a result of missing components, once available (replacement) components have been installed. - Conduct flight checks (sampling) on the first 10% of the fleet (at least 1 aircraft) in each group. - In case of findings during the sampling of each group, this can be extended in order to address the problem and confirm the trend. - Obtain special flight permits for aircraft that are not airworthy and whose work must be performed in a location other than that of the aircraft. To this end, the procedure established in the 	<ul style="list-style-type: none"> - Depending on the magnitude of the change, perform a new risk analysis. - Include in the SMS the indicators that are necessary to control and mitigate the hazards that generate risks. - Coordinate with the CAA and submit for its acceptance the recovery plan to restore all maintenance activities in an orderly and safe manner. 	<ul style="list-style-type: none"> - Implement the recovery plan, as accepted by the CAA. - Capitalise on experiences gained during the pandemic period and establish which procedures may remain and be applied. - Validate the results of the activities carried out through remote and desktop or face-to-face audits on the processes carried out. - Share the information with other operators.

Process	Examples of hazards	Examples of possible consequences	Examples of risk index	Examples of possible mitigation measures	Operational considerations during the contingency	Considerations before resuming normal service	Operational considerations during the first months of normal service
		<ul style="list-style-type: none"> • Overheating - Loss of control in flight due to failure of flight control systems. 		<ul style="list-style-type: none"> - If this is not possible, consider transporting the aircraft to another place without affecting safety, ensuring that the corresponding special flight permit is obtained, following the guidelines set out in the operator's manuals. - Record in the journey logbook any missing components, which must coincide with the physical inspection of the aircraft. - Take into account any additional protection (e.g. sealing cover for engine inlets and leading edges, seat cover and removal of the cushion during storage) as long as it does not contradict the instructions of the TC holder. - Contact the TC holder for additional assistance if needed to add inspection elements to the return to service procedures for environmentally sensitive structures or parts. For example, engineering judgement must select the opening of some panels located in lower external areas where water accumulation could occur. 	<p>manuals must be followed and the corresponding risk analysis carried out.</p>		
Decision-making	<ul style="list-style-type: none"> - Absence of key personnel. - Incorrect decision-making. - Failure to control continuing airworthiness. 	<ul style="list-style-type: none"> - Aircraft, engine or propeller failures (where applicable) not classified as accidents. - System/component failure or malfunction (non powerplant) (SCF-NP) 	<p>With no mitigations 5A Frequent: 5 Catastrophic: A</p>	<ul style="list-style-type: none"> - The service provider must nominate as soon as possible the delegated representatives for the different activities carried out by key personnel and record the decisions taken, so that in case of doubt 	<ul style="list-style-type: none"> - Conduct daily meetings between key staff and the personnel responsible for the supervision and certification of the jobs done. 	<ul style="list-style-type: none"> - Depending on the magnitude of the change, perform a new risk analysis. - Include in the SMS the indicators that are necessary to control and 	<ul style="list-style-type: none"> - Implement the recovery plan, as accepted by the CAA. - Capitalise on experiences gained during the pandemic period and establish

Process	Examples of hazards	Examples of possible consequences	Examples of risk index	Examples of possible mitigation measures	Operational considerations during the contingency	Considerations before resuming normal service	Operational considerations during the first months of normal service
	<ul style="list-style-type: none"> - Errors during the performance of maintenance jobs. - Poor scheduling of maintenance jobs. - Business or time pressure while performing airworthiness reviews or other inspections. - Business or time pressure affecting human performance. 	<ul style="list-style-type: none"> • False fire or overheating alarm • Of flight controls • Of windshield/window/door • Of landing gear • Unintentional/explosive decompression • Tyre burst • Structural failure • Loss of component - inflight • Loss of component - ground • Fuel leaks - System/component failure or malfunction (powerplant) (SCF-PP) <ul style="list-style-type: none"> • Engine failure - inflight • Engine failure - ground • Of propeller • Of rotor • Overheating 	<p style="text-align: center;">With mitigations</p> <p style="text-align: center;">3D</p> <p>Remote: 3 Minor: D</p>	<p>they can be confirmed at a later stage.</p> <ul style="list-style-type: none"> - Plan in advance for the availability of airworthiness review personnel who may be required to perform aircraft document reviews and physical inspections of aircraft. Consider whether airworthiness review personnel must be accompanied by certifying staff for physical inspection. - Plan maintenance jobs realistically and add margins. - Explain the mitigation measures implemented to gain the confidence of staff. Remind staff to ask key staff or their representative when in doubt. - Develop a procedure for interaction between the operator and the AMO in order to properly coordinate issues affecting safety. - Establish that safety meetings be held to address all problems encountered in the operator and the AMO. These meetings must be at least three times a week or when safety-related problems arise. - Apply the principles of "just culture". 	<ul style="list-style-type: none"> - Carry out a detailed analysis, to be presented at all safety meetings. - The staff responsible for the jobs will ensure that the work is assigned to the most competent staff. - Exchange safety information between the operator and the AMO. 	<p>mitigate the hazards that generate risks.</p> <ul style="list-style-type: none"> - Coordinate with the CAA and submit for its acceptance the recovery plan to restore all maintenance activities in an orderly and safe manner. 	<p>which procedures may remain and be applied.</p> <ul style="list-style-type: none"> - Validate the results of the activities carried out, through remote and desktop or face-to-face audits on the processes carried out. - Share the information with other operators.
Supplies of components,	- Non-serviceable tools and equipment (expired	- Aircraft, engine or propeller failures	With no mitigations	- See CA-AIR-145-004 – Measures that LAR 145 approved maintenance	- See CA-AIR-145-004 – Measures that LAR 145 approved maintenance	- See CA-AIR-145-004 – Measures that LAR 145 approved maintenance	- See CA-AIR-145-004 – Measures that LAR 145 approved maintenance

Process	Examples of hazards	Examples of possible consequences	Examples of risk index	Examples of possible mitigation measures	Operational considerations during the contingency	Considerations before resuming normal service	Operational considerations during the first months of normal service
materials and tools	calibration of tools and test equipment). - Jobs that require the use of calibrated tools that do not offer reliability.	(where applicable) not classified as accidents. - System/component failure or malfunction (non-powerplant) (SCF-NP) <ul style="list-style-type: none"> • Of flight controls • Of windshield/window/door • Of landing gear • Tyre burst • Structural failure • Loss of component - inflight • Loss of component - ground • ATC Transponder • Static pitot system • Altimeter - System/component failure or malfunction (powerplant) (SCF-PP) <ul style="list-style-type: none"> • Engine failure - inflight • Engine failure - ground • Of propeller • Of rotor • Overheating 	<p style="color: red; font-weight: bold;">5A</p> Frequent: 5 Catastrophic: A <p style="text-align: center;">With mitigations</p> <p style="color: orange; font-weight: bold;">3D</p> Remote: 3 Minor: D	organisations (AMOs) may request to address changes caused by COVID-19 with respect to the approval granted.	organisations (AMOs) may request to address changes caused by COVID-19 with respect to the approval granted.	organisations (AMOs) may request to address changes caused by COVID-19 with respect to the approval granted.	organisations (AMOs) may request to address changes caused by COVID-19 with respect to the approval granted.
	- Suppliers do not deliver replacement components or parts on time or in the required quantity or with the expected quality. - Need to supplement the workforce with external staff not	- System/component failure or malfunction (non-powerplant) (SCF-NP) <ul style="list-style-type: none"> • Flight controls • Of windshield/window/door • Of landing gear • Tyre burst 		- Ensure that the organisation or staff in charge of maintenance continues to perform the jobs. - Plan the jobs to be carried out well in advance. - Review the procedure for receiving parts in order to establish additional control	- Train all hired staff in the manual and the procedures to be followed for conducting maintenance. - Assess the proficiency of external staff before they start work and assign supervisors to check their work.	- Depending on the magnitude of the change, perform a new risk analysis. - Include in the SMS the indicators that are necessary to control and mitigate the hazards that generate risks. - Coordinate with the CAA and submit for its	- Implement the recovery plan, as accepted by the CAA. - Capitalise on experiences gained during the pandemic period and establish which procedures can be retained and applied.

Process	Examples of hazards	Examples of possible consequences	Examples of risk index	Examples of possible mitigation measures	Operational considerations during the contingency	Considerations before resuming normal service	Operational considerations during the first months of normal service
	<p>accustomed to working methods.</p> <ul style="list-style-type: none"> - Impossibility of being able to comply with the replacement of components controlled by calendar expiration. - Non-compliance with maintenance procedures by external personnel. - Errors during processes carried out by external personnel in charge of maintenance. 	<ul style="list-style-type: none"> • Structural failure • Loss of component - inflight • Loss of component - ground - System/component failure or malfunction (powerplant) (SCF-PP) <ul style="list-style-type: none"> • Engine failure - inflight • Engine failure - ground • Of propeller • Of rotor 		<p>for the duration of the health emergency.</p> <ul style="list-style-type: none"> - Identify internal procedures that external staff need to know before starting work and train them in these procedures. 	<ul style="list-style-type: none"> - Provide information about the jobs to be done through a system that ensures that maintenance staff cannot skip any scheduled jobs. 	<p>acceptance the recovery plan to restore all maintenance activities in an orderly and safe manner.</p>	<ul style="list-style-type: none"> - Validate the results of the activities carried out, through remote and desktop or face-to-face audits on the processes carried out. - Share the information with other operators.

APPENDIX B

Examples of likelihood and severity tables and risk assessment matrices

Table 1: Risk likelihood

Likelihood	Meaning	Value
Frequent	Likely to occur many times (has occurred frequently)	5
Occasional	Likely to occur sometimes (has occurred infrequently)	4
Remote	Unlikely to occur, but possible (has occurred rarely)	3
Improbable	Very unlikely to occur (not known to have occurred)	2
Extremely improbable	Almost inconceivable that the event will occur	1

Table 2: Severity of risk

Severity	Meaning	Value
Catastrophic	<ul style="list-style-type: none"> Aircraft or equipment destroyed Several fatalities. 	A
Hazardous	<ul style="list-style-type: none"> Greatly reduced safety margins, physical stress or a workload such that operations personnel can no longer be relied upon to perform their tasks accurately or completely Serious injuries Significant damage to equipment 	B
Major	<ul style="list-style-type: none"> Significant reduction in safety margins, reduced ability of operations personnel to tolerate adverse operating conditions, as a result of increased workload or as a result of conditions affecting their efficiency Serious incident Injuries to people 	C
Minor	<ul style="list-style-type: none"> Inconveniences Operational limitations Use of emergency procedures Minor incident 	D
Negligible	<ul style="list-style-type: none"> Consequences 	E

Table 3: Risk assessment matrix

Probability of risk	Severity of risk				
	Catastrophic A	Hazardous B	Major C	Minor D	Negligible E
Frequent 5	5A	5B	5C	5D	5E
Occasional 4	4A	4B	4C	4D	4E
Remote 3	3A	3B	3C	3D	3E
Improbable 2	2A	2B	2C	2D	2E
Extremely improbable 1	1A	1B	1C	1D	1E

Risk index range	Description	Recommended action
5A, 5B, 5C, 4A, 4B, 3A	Intolerable	Take immediate action to mitigate risk or cease activity. Perform priority safety risk mitigation to ensure that preventive or additional or enhanced controls are in place to reduce the risk index to the tolerable range
5D, 5E, 4C, 4D 4E, 3B, 3C, 3D, 2A, 2B, 2C, 1A	Tolerable	May be tolerated based on safety risk mitigation. May require a management decision to accept the risk
3E, 2D, 2E, 1B, 1C, 1D, 1E	Acceptable	Acceptable as is. No further risk mitigation required.

APPENDIX C Example of a recovery plan

		RECOVERY PLAN														Rev. original
ID	Task Name	August					September				October				Novem	
		7/26	8/2	8/9	8/16	8/23	8/30	9/6	9/13	9/20	9/27	10/4	10/11	10/18	10/25	11/1
1	RECOVERY PLAN	■														
2	Coordination with the CAA	■														
3	Meeting with CAA to inform about action to be taken by the AMO	■														
4	Submission of recovery plan to the CAA	■														
5	Acceptance of the recovery plan	■														
6	Implementation of the recovery plan	■														
7	Maintenance control manual (MCM)	■														
8	Review the MCM to identify procedures that must be removed or retained	■														
9	Present the MCM to the CAA	■														
10	Acceptance of the MCM	■														
11	Publish and distribute the MCM within the organisation	■														
12	Train continuing airworthiness staff and AMO personnel in charge of maintenance	■														
13	Changes in the organisation	■														
14	Review all the changes that have occurred in the operator	■														
15	Conduct a risk analysis in order to implement the necessary mitigation and restructuring in the areas that have had changes	■														
16	Review the MCM based on the changes that need to be incorporated and submit it to the CAA for its acceptance	■														
17	Publish and distribute the MCM within the organisation	■														
18	Train continuing airworthiness staff and AMO personnel in charge of maintenance	■														
19	Deferral of a scheduled task until after the return to service	■														

RECOVERY PLAN														Rev. original		
ID	Task Name	August					September				October			Novem		
		7/26	8/2	8/9	8/16	8/23	8/30	9/6	9/13	9/20	9/27	10/4	10/11	10/18	10/25	11/1
20	Start programming all the tasks contained in the maintenance programme that were made more flexible															
21	Completion of all the jobs that was exceptionally deferred (one time only)															
22	Updating of maintenance checks by the continuing airworthiness department															
23	Inform the CAA that the job has been completed															
Page 2																