MODEL ADVISORY CIRCULAR

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DATE : 28-05-2020
REVISION : Original
ISSUED BY : SRVSOP

SUBJECT: TRANSPORT OF CARGO IN THE PASSENGER CABIN

Section A – Purpose
This Advisory Circular (AC) provides information and guidance for the transport of cargo in the passenger cabin of aircraft with a maximum certificated take-off mass of over 27,000 kg, ensuring that an acceptable level of safety is maintained at all times. This AC primarily addresses the transport of vital supplies helping combat the COVID-19 pandemic on aircraft of air service operators.

Note: Air service operators that were authorised to carry cargo in the passenger cabin prior to the COVID-19 pandemic, in addition to carrying vital supplies that help combat the health crisis, may continue to carry the cargo for which they were authorised.

Section B – Scope
This AC is intended for air service operators requesting to transport critical cargo in the passenger cabin, such as food and medical supplies, as a result of the COVID-19 crisis.

Section C – Applicability
This AC is not of a mandatory or regulatory nature. It describes acceptable, but not the only, means of transporting cargo in the passenger cabin. The terms "must," "need to" and "shall" will be used only in the sense of ensuring the applicability of this particular means of compliance. While this AC is not mandatory, it is derived from recommendations from authorities, organisations and industry that support successful compliance of applicable requirements.

Section D – Transport of cargo in the passenger cabin

Chapter A – Definitions
Cargo aircraft. Any aircraft, other than passenger aircraft, that is carrying goods or property.

Passenger aircraft. Any aircraft carrying any person other than crew, an operator's employee in an official capacity, an authorised representative of an appropriate national authority or a person accompanying a consignment or other cargo.

Cargo tie down area. Any area of the main passenger cabin floor, which is used to secure cargo, and further defined by the removal of 1, 2 or 3 rows of passenger seats. Exit exits must not be included in the cargo tie down area.

Cargo Seat Bag (CSB). Especially designed container/bag to be fitted in a row of seats for the purpose of stowing cargo or mail.

A Class A cargo or baggage compartment is one in which:

a. the presence of a fire would be easily discovered by a crew member while at his or her station; and
b. each part of the compartment is easily accessible in flight. Class A cargo compartment is not required to have a liner.

A Class B cargo or luggage compartment is one in which:

a. there is sufficient access in flight to enable a crew member to effectively reach any part of the compartment with the contents of a hand fire extinguisher;
b. when the access provisions are being used, no hazardous quantity of smoke, flames, or extinguishing agent, will enter any compartment occupied by the crew or passengers; and
c. there is an approved smoke detector or fire detector system to give warning at the pilot or flight engineer station.

A Class C cargo or baggage compartment is one not meeting the requirements for either Class A or B compartment but in which:

a. there is a separate approved smoke detector or fire detector system to give warning at the pilot or flight engineer station;
b. there is an approved built-in fire extinguishing or suppression system controllable from the pilot or flight engineer station;
c. there are means to exclude hazardous quantities of smoke, flames, or extinguishing agent, from any compartment occupied by the crew or passengers; and
d. there are means to control ventilation and draughts within the compartment so that the extinguishing agent used can control any fire that may start within the compartment.

A Class D cargo or luggage compartment is one in which:

a. a fire occurring in it will be completely confined without endangering the safety of the aeroplane or the occupants;
b. there are means to exclude hazardous quantities of smoke, flames, or other noxious gases from any compartment occupied by the crew or passengers;
c. ventilation and draughts are controlled within each compartment so that any fire likely to occur in the compartment will not progress beyond safe limits; and
d. consideration is given to the effect of heat within the compartment on adjacent critical parts of the aeroplane.

Load master. The member of an aircraft’s crew responsible for supervision and coordination of loading, unloading operations.

Chapter B – General

a. Passenger aircraft are not certified to carry cargo in the passenger cabin, or cargo on passenger seats or unit cargo items (pallets or containers) secured on passenger seat tracks. However, some operators are considering reconfiguring passenger aircraft to place cargo on top of passenger seats or removing the seats, in order to increase the volume available for cargo transport.
b. Any reconfiguration of an aircraft in this respect requires a comprehensive assessment of the restrictions to cargo directly anchored to passenger seat tracks, to ensure that the structural loads are within the design limits, and that an appropriate restraint and securing system is applied. Reconfiguration of the aircraft requires formal approval by the civil aviation authority (CAA) of the State of the operator.

Note: The term reconfiguration in this AC means: to make the changes for which the aircraft was originally certified, if it is now to carry cargo in the cabin which was certified for the transport of passengers.

c. Any modification made to the configuration for which an aircraft is built is considered a change to the aircraft type certificate. Therefore, in normal situations, the modification must be made either by a revision to the type certificate, by a supplemental type certificate (STC), or by some other document issued by the aircraft manufacturer and approved by the CAA of the State of design.

d. Due to the global COVID-19 pandemic, several States have closed their borders and most airlines have grounded their aircraft, substantially reducing their services. Therefore, consideration should be given to allowing airlines to transport critical cargo supplies, such as food and medical supplies, on passenger seats. Examples of critical cargo supplies are listed in Appendix C to this AC.

e. There are currently airlines that have already carried tonnes of cargo in the passenger cabin, so there is a possibility that other airlines will consider this option.

f. Aircraft manufacturers such as Boeing and Airbus recommend that airlines seeking to carry cargo on passenger seats should coordinate with their CAAs on any regulatory restrictions that include the type of cargo, fire fighting, smoke detection, etc.

g. A table on the types of operation and their respective required approvals and authorisations is presented below.
<table>
<thead>
<tr>
<th>TYPE OF OPERATION</th>
<th>OPERATIONAL AUTHORISATION</th>
<th>AIRWORTHINESS APPROVAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cargo in lower holds designed for that purpose.</td>
<td>NO</td>
<td>NO No modification to the aircraft type certificate.</td>
</tr>
<tr>
<td>2. Cargo in manufacturer-approved storage locations in the passenger cabin having the maximum permissible cargo identification plate. (Cargo compartments, galleys, closets / bulkheads, front lower space under seats, overhead baggage compartment).</td>
<td>YES An operational procedure is required for aircraft operation without passengers, as well as a specific loading procedure.</td>
<td>NO No modification to the aircraft type certificate.</td>
</tr>
<tr>
<td>3. Transport of cargo on passenger seats (limited to critical supplies).</td>
<td>YES An operational procedure is required for aircraft operation without passengers, as well as a specific loading procedure.</td>
<td>NO • Notwithstanding a change to the aircraft type certificate when seats are used to carry cargo instead of passengers, the CAA recognises the transport of critical cargo supplies on passenger seats as a minor modification, to occur for the duration of the COVID-19 pandemic. • The aircraft under these conditions has not been physically altered.</td>
</tr>
<tr>
<td>4. Transport of cargo on passenger seats (other than critical supplies).</td>
<td>YES An operational procedure is required for passenger-free operations, as well as a specific loading procedure.</td>
<td>YES Approval of major modification.</td>
</tr>
<tr>
<td>5. Transport of any kind of cargo after removing the seats.</td>
<td>YES An operational procedure is required for aircraft operation without passengers, as well as a specific loading procedure.</td>
<td>YES Major modification approval through a supplemental type certificate (STC), service bulletin (SB) or equivalent document.</td>
</tr>
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</table>
The types of operation mentioned in the table above shall be applied as follows:

<table>
<thead>
<tr>
<th>Types of operation</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No deviations from the regulations are required.</td>
</tr>
<tr>
<td>2 and 3</td>
<td>The exceptional procedure for the operation in question must be submitted.</td>
</tr>
<tr>
<td>4 and 5</td>
<td>Approval of the major modification must be requested, and the exceptional procedure for the operation in question must be submitted.</td>
</tr>
</tbody>
</table>

Chapter C – General recommendations

a. It is of utmost importance for operators to be familiar with cargo transport before considering carrying out such an operation.

b. Typically, operators shall:
   1) perform safety risk management (SRM), which comprises the identification of hazards and their consequence, safety risk assessment, mitigation and acceptance. Some examples of hazards involved in the transport of cargo in the passenger cabin are described below:
      i. lack of, or incomplete or incorrect, training and transfer of prior and general knowledge of the operator on the transport of cargo;
      ii. lack of, or ineffective, established procedures for the acceptance, handling and loading of cargo aircraft only (CAO) labelled dangerous goods;
      iii. lack of, or incomplete or incorrect, training and transfer of skills to personnel present in the passenger cabin on smoke or fire detection and knowledge of firefighting procedures;
      iv. absence of, or ineffective, qualification of crew members or other personnel in controlling and extinguishing fires in the passenger cabin;
      v. lack of, incomplete or incorrect provision, location and storage of sufficient fire extinguishing equipment such as protective breathing equipment (PBE), fire extinguishers, etc., for use in the cabin crew;
      vi. stowage of misdeclared/undeclared, or hidden dangerous goods within the cargo;
      vii. failure to gain access to all cargo loaded into the passenger cabin;
      viii. cargo leakage / spillage;
      ix. unsecured / incorrectly stowed cargo;
      x. incorrect loading and unloading sequence;
      xi. incorrect weight (mass) and balance calculations;
      xii. lack of, or ineffective qualification of ground operations personnel to prepare and stow cargo in accordance with applicable regulations and instructions; and
      xiii. lack of, poor or unreliable, management of occupational health and safety (OHS) risks associated with the new procedures.

c. Use crew to survey and access all areas of the cabin during all phases of flight. This is to
address any possible risk of fire, leakage or other unforeseen circumstances that may occur in the passenger cabin during the flight.

d. Use load master or other appropriately trained personnel to coordinate all loading/unloading operations.

Chapter D – Regulatory requirements

a. Aeronautical regulations and aircraft manufacturers' procedures permit operators to load verified cargo and mail in the cabin of passenger aircraft subject to defined conditions and, where necessary, specific regulatory authorisation.

b. When cargo is loaded into the passenger cabin, it must not include dangerous goods or live animals. For the purposes of this AC, the passenger cabin must be considered as a Class A cargo compartment. As such, the operator must ensure that sufficient cabin crew or other qualified personnel are on board to monitor the cabin throughout the duration of the flight for any indication of smoke or fire and, where necessary, to alert the flight crew and use the available fire fighting equipment to fight the fire.

c. Approved loading locations

Verified and scanned cargo can be carried in approved stowage locations within the passenger compartment. These locations include overhead stowage bins, closets, floor-mounted (dog house) stowage, and under seat stowage areas.

*Note:* It is not recommended to load mail in the passenger cabin unless the contents of the mail can be verified to exclude the presence of dangerous goods.

The following restrictions typically apply:

1) stowage maximum capacity must not be exceeded;

2) the weight (mass) of cargo shall not exceed the structural loading limits of the floor or seats; detailed information on allowances shall be available in the manufacturer weight (mass) and balance manual;

3) the number/type of restraint devices and their attachment points shall be capable of restraining the cargo in accordance with applicable certification specifications;

4) if the cargo is stored under the seats, then the seat shall be equipped with a restraint bar system and the cargo placed fully underneath the seat. The mass of each piece of cargo must not exceed 9 kg (20 lb);

5) items shall not be stowed in lavatories or at floor level against bulkheads that are incapable of properly restraining articles against movement under varying flight conditions, unless the bulkheads carry a placard specifying the maximum capacity;

6) cargo must not be placed where it can impede or restrict access to emergency equipment, or hinder egress in case of an emergency evacuation;

7) cargo placed in enclosed stowage areas shall not be of such size that they prevent latched doors from being closed securely; and

8) checks shall be made before take-off, before landing and whenever the fasten seat belt signs are illuminated as well as under orders of the pilot in command to ensure that the cargo is properly stowed and secured.

d. Not-approved loading locations

1) On passenger seats

For carriage of cargo in other than approved locations as described in item (c) above, if the operator wishes to load cargo on passenger seats, the operator must obtain prior authorisation from its national aviation authority, which may require the issuance of a supplemental type certificate (STC). Specific information from the aircraft manufacturer
may also be required.

Typically, the following limitations shall apply:

i. The weight (mass) of cargo loaded on the seats shall not exceed the seat limitation (refer to aircraft weight (mass) and balance manual);

ii. The actual weight of cargo and even load distribution must be used to ensure that the aircraft flight manual (AFM), aircraft weight (mass) and balance manual, and minimum flight weight limits, or equivalent, are never violated;

iii. The operational envelope used for regular passenger flights will be applied. Alternatively, curtailments can be re-assessed but must include all applicable curtailments;

iv. Cargo must be adequately restrained, the number/type of restraint devices and their attachment points must be capable of restraining the cargo in accordance with applicable certification specifications;

v. The centre of gravity (CG) of the cargo is equal to lower than the CG shown in the envelope drawing of the seats in use, as reported in the manufacturer weight (mass) and balance manual or similar documents;

vi. Cargo distribution shall be appropriately accounted for in the weight (mass) and balance system, and any operational limit must be respected; and

vii. The cargo shall be evenly distributed across the seat row. The loading on each seat must not exceed 75 kg (165 lb) or the limits as provided by the aircraft or seat manufacturer, whichever is less in terms of weight.

2) On passenger cabin floor (seats removed)

If the operator wishes to remove passenger seats and to load cargo directly on the passenger cabin floor with cargo restraints connected directly to the seat tracks, the following additional limitations could be applied:

i. There is a minimum of 1 complete row of unoccupied seats at the forward and aft ends of the tie down area. 'Unoccupied' means no passengers and no cargo on the seats;

ii. Maximum cargo weight for any given tie down scenario is limited to the value recommended by the aircraft manufacturer;

iii. Cargo must be evenly distributed across the tie down area and shall not exceed the area load limits recommended by the aircraft manufacturer;

iv. Cargo loaded directly on the floor must not exceed the floor limits defined in the weight (mass) and balance manual or equivalent document;

v. The cargo centre of gravity (CG) height must not exceed the value provided by the aircraft manufacturer;

vi. The lateral and longitudinal CG of the cargo must be within the limits provided by the aircraft manufacturer (typically +/-10% of the centre of the tie down pattern);

vii. Cargo must not restrict passage through corridors, doors, galleys or emergency exits;

viii. Cargo must be adequately restrained to ensure the cargo does not come loose or shift during all phases of flight, or in emergency landing conditions;

ix. The maximum weights that can be restrained as per forward, aft, lateral and vertical limits must be within the limits provided by the aircraft manufacturer;
x. The number of tie down points for a given cargo weight and type, the number of stud tie down fittings and strap assemblies will be used as per recommendations provided by the aircraft manufacturer. Technical standard order (TSO) certified nets and straps should be used; and

xi. Attention must be given to avoid load share of restrained into any galleys, lavatories, bulkheads, partitions or other fixed structures.

e. To be included in the regulations

There are States that have developed requirements related to the transport of cargo in the passenger cabin, which have been included in this AC and which can be considered as guidance to enable this mode of cargo transportation:

1) Cargo may be transported anywhere in the passenger cabin, provided that an approved cargo container complying with the following requirements is used:
   i. the container must withstand the load factors and emergency landing conditions applicable to passenger seats on the aircraft in which the container is fitted, multiplied by a factor of 1.15, using the combined weight of the container and the maximum weight of cargo that can be carried in the container;
   ii. the maximum weight (mass) of cargo that the container is allowed to carry and the instructions necessary to ensure the proper distribution of weight (mass) within the container must be visibly marked on the container;
   iii. the container must not impose any load on the floor or other aircraft structure in excess of the load limitations of that structure;
   iv. the container must be secured to the seat tracks or aircraft floor structure, and its attachment must withstand the load factors and emergency landing conditions applicable to the passenger seats in the aircraft in which the container is fitted, multiplied by the factor of 1.15, or by the seat attachment factor specified for the aircraft, whichever is greater, using the combined weight of the container and the maximum weight of the cargo that can be carried in the container;
   v. the container cannot be installed in a position that restricts access to, or use of, any required emergency exit, or the aisle in the passenger cabin;
   vi. the container must be completely closed and made of a material that is, at least, fire resistant; and
   vii. adequate safeguards must be provided within the container to prevent shifting of cargo in emergency landing conditions.

2) Cargo may be transported on the back of the bulkhead or partition of the passenger compartment, provided that the cargo is subject to the load factors set out in Section 25.561 (b)(3) and is stowed as follows:
   i. it is properly secured by a seat belt or other restraint system of sufficient strength to eliminate the possibility of shifting under all anticipated normal flight and ground conditions;
   ii. it is packaged or covered in such a way as to prevent possible injury;
   iii. does not impose any load on the seats or floor structure that exceeds the load limitation for those components;
   iv. its location does not restrict access to, or use of, any required emergency or regular exit, or the aisle in the passenger cabin; and
v. its location does not conceal the "seat belt" and "no smoking" signs, unless an auxiliary sign or other approved means is provided for notifying the personnel in the passenger cabin.

3) Cargo, including hand baggage, may be carried in any part of the passenger cabin of a non-transport category aircraft certified after 31 December 1964, if carried in an approved cargo rack, container or compartment installed in the aircraft, and secured by an approved means, or if carried in accordance with the following:

i. Cargo must be properly secured by a seat belt or other means of restraint of sufficient strength to eliminate the possibility of shifting under any normally expected flight and ground conditions, or for carry-on baggage and to prevent shifting during air turbulence.

ii. It must be packaged or covered to prevent possible injury to occupants.

iii. It must not impose any load on the seats or floor structure exceeding the load limitation for those components.

iv. It must not be located in a position that obstructs access to, or use of, any required emergency or regular exit, or use of the aisle between the crew and the passenger cabin, or be located in a position that obstructs any passenger's view of the "seat belt", "no smoking", or any required exit sign, unless an auxiliary sign or other approved means for proper passenger notification is provided.

v. It is not carried directly over seated occupants.

vi. It is stored in accordance with regulatory requirements for take-off and landing.

vii. For cargo aircraft operations, paragraph (3)(iv) of this subparagraph does not apply if the cargo is distributed in such a way that at least one emergency exit or regular exit is available to provide all occupants of the aircraft with an unobstructed means of egress in case of an emergency.

Chapter E – Action by Airbus and Boeing

Action taken by Airbus and Boeing is shown in Appendix D to this AC.

Chapter F – Airworthiness aspects for cargo transport in the passenger cabin

a. Transport of medical supplies under a design change approval

In the context of the emergency created by the COVID-19 pandemic, approved design organisations may reclassify modifications that allow the transport of cargo in the passenger cabin as a "minor change" and approve such modifications, according to their DOA privileges or equivalent regulations, allowing the use of cabin seats when related to the transport of medical supplies (for example, masks, gloves, clothing, etc.), as long as they are not classified as dangerous goods. This must be stated in the approval documents and the aircraft flight manual (AFM) supplement.

Since this type of installation is a change in the scope of the air operator, and in the absence of specific operational requirements covering this type of operation, the installation and the operating procedures must be addressed taking into account the specific configuration of each aircraft model affected.

Further guidance can be found in the operational aspects of this AC, which shall be taken into account.
b. **Transport of other type of cargo under a design change approval**

For the transport of cargo other than medical supplies, as well as in the case where it is necessary to remove seats to allow the cargo to be secured to the aircraft structure for cargo operations, a type design change, or a supplemental type certificate (STC) for a major modification must be requested from the CAA of the State of design, and this must be approved by the State of registry.

**Chapter G – Recommended operational procedures for the transport of cargo in the passenger cabin**

*Note.* Cargo should only be transported by air service operators that have valid cargo transport approvals.

**a. Crew composition**

1) Operations without passengers will still require one or more crew members to inspect and access all areas of the cabin during all phases of flight. Any fire that may occur must be discovered and extinguished immediately using existing emergency equipment.

2) The additional crew must be seated far from the cargo (*i.e.*, the front rows).

**b. Procedures**

1) An assessment must be made to identify the risks associated with the operation of cargo flights using cabin configurations that have been approved for transport of passengers only.

2) Checks must be made before take-off, before landing, and under orders of the pilot-in-command to ensure that cargo is properly distributed and secured.

3) Operators shall establish procedures to manage emergencies in the cabin.

4) Operators must publish temporary revisions to the Operations Manual (OM) to include the new type of operations and the related procedures.

**c. Cargo distribution, mitigations (focus areas for the competent authorities) for cargo transport in the passenger compartment, including passenger seats**

1) The weight (mass) and exact position of the cargo in the passenger cabin and in the cargo hold will be reflected in the weight (mass) and balance documentation (load sheet).

2) The pilot-in-command (PIC) must be informed of the contents of all cargo using the notice to captain (NOTOC).

3) The operator will stow the aircraft taking into account the various levels of fire protection available in the cargo distribution areas.

4) For compartments that have a placard indicating maximum capacity, cargo items stored in these compartments shall not exceed the maximum capacity shown on the placard.
5) Maximum capacity limitations shown on the required security placards (at, or adjacent to, approved cargo stowage locations) must not be exceeded. All stowage instructions specified on the placards apply.

6) The weight (mass) of the cargo must not exceed the structural load limits of the floor or seats as published in the aeroplane documentation (e.g., the chapter on limitations of the weight (mass) and balance manual). Compliance with LAR 25.561 (Emergency landing conditions - General) and LAR 25.789 (Retention of items of mass in passenger and crew compartments and galleys) is expected.

7) Cargo placed in closed stowage areas shall not be of such size that it prevents latched doors from being closed securely.

8) Cargo items must be stored only in a location that is capable of containing them.

9) Cargo will be stowed in a location such that, in case of an emergency evacuation, it will not impede access and egress from the aisle.

10) Cargo must not be placed where it may impede access to emergency equipment.

11) Cargo must be checked to ensure proper stowage in the following cases (at least):
   • before take-off;
   • before landing; and
   • under orders of the pilot-in-command (PIC).

12) Aisles must remain free of cargo to allow access to seats and items in case of smoke or fire.

13) Any smoke/fire within the cabin must be easily detected and extinguished using existing emergency equipment. The crew / alternate crew must be on board to inspect and access all areas of the cabin during all phases of flight. There must be an adequate number of trained crew members/alternate crew (other than the flight crew) acting as firefighters, with sufficient amount of fire-fighting equipment. This equipment may be stowed in the cabin using existing stowage locations (overhead bins, compartments) provided that the location is identifiable to the crew. Specific details must be coordinated with local regulatory authorities.

14) Occupants should use the existing cabin crew seats. Otherwise, occupants must not share rows with cargo. There must be a clear separation of the areas where occupants are seated and those fitted with cargo during taxiing, take-off and landing. There must be at least one empty seat row between the cargo and the seats of standby occupants.

15) Under seat stowage is permitted, only if the seat is equipped with a restraint bar system and the cargo placed fully underneath the seat. The mass of the cargo under each seat must not exceed 9 kg (20 lb).

16) Cargo packaging shall be capable of equalising pressure to withstand Delta pressure (DP) during flight, as appropriate.

17) All smoke and fire detectors must be maintained according to the instructions in the aircraft maintenance manual (AMM).

18) The air conditioning system must be regulated taking into account the nature of the cargo carried in the cabin, and the number and distribution of cabin occupants.

19) The load must be evenly distributed across the seat row. The loading on each seat must not exceed 75 kg (165 lb).

20) The vertical centre of gravity (CG) of the cargo must be equal to, or less than, the CG of the passenger seat, furnished by the seat supplier.

21) The cargo on the seats must be properly secured and the retraction straps must be
attached to the existing seat belt, or to the seat itself. The latch must especially withstand upward, forward and lateral loads. The seat back is generally not designed to withstand cargo-induced emergency landing forces.

d. **Cargo preparation**

Operators shall consider the type of cargo that is proposed to be loaded in the passenger cabin. Specific considerations include:

1) Verification of the content of packages to ensure that there are no dangerous goods;

2) The weight of the individual packages to minimise the potential for manual handling injuries;

3) The volume of packages to ensure that they can be loaded into overhead bins, coat cupboards or under the seats;

4) Be aware that medical supplies may contain items such as mercury thermometers and/or alcohol-based sanitizer, which are classified as dangerous goods;

5) Size and weight (mass) of the packages and their ability to be loaded into the available bins, bags, or alternative methods. This must also include the weight distribution throughout the aircraft in accordance with the load master's instructions.

6) Centre of gravity (CG) of the cargo to ensure that it can be loaded equal to, or lower than, the CG height recommended by the aircraft manufacturer;

7) Availability of loading, unloading, shoring, load spreading and restraint equipment;

8) Packages shall be free of sharp edges to prevent injury as they will be manually loaded;

9) Wet cargo shall not be loaded in the passenger cabin;

10) Cargo to be loaded in the passenger cabin shall be within the applicable limits for dimensions and weight.

For carriage of cargo in other than approved locations as described in Chapter D, paragraph (c), if the operator wishes to accept cargo to load on the passenger seats or aircraft cabin floor, the operator shall also consider:

11) For loading on the passenger seats, the loading limitations and restraint capability of the seats.

12) For loading on the passenger floor, the load limitations as derived by the load limitation form.

13) Identification of the cargo to be loaded in the specific locations.

To identify the cargo planned to be loaded in the passenger cabin, the special handling code “CIC” (cargo loaded in passenger cabin) should be used. This code will facilitate resource planning for loading/unloading, load preparation and load control functions.

The documents and messages in which this code will be used are:

- FBL: Freight Booked List
- FFR AWB: Space Allocation Request
- FFA: Air Waybill Space Allocation Answer
- FFM: Flight Manifest
- FWB: Air Waybill
- UWS – ULD: Weight Signal
- NTM: Network for Transport Measures
e. Loading instruction report (LIR), weight and balance, and documentation

1) Weight and balance system

Seats remain installed

i. Most of the weight and balance systems (DCS) are set to calculate the load in the passenger cabin.

ii. If the system is programmed to accommodate the passenger weights only, it is recommended to contact the DCS administrator to investigate appropriate solutions to adjust the system for cargo. It should be noted that, in most of the cases, the systems make provision for allocating extra weight in each cabin section (e.g., 0a, 0b, etc.) as needed.

iii. If possible, it is recommended for DCS systems to set parameters for weight allocation for each row to reduce CG error in the final calculation.

Seats are removed

In general, DCSs are not designed to verify maximum weight limits for the passenger cabin floor. Operators must identify applicable limits for cargo tie down areas and report them to all relevant departments by creating a dedicated loading limitation form.

Note: Cargo loaded in the stowage bins and other areas must also be accounted for and divided as per the new centre of gravity derived by the cargo tie down areas defined for that specific configuration.

2) Loading instruction report (LIR)

General

i. It should be noted that LIR forms typically do not include the passenger cabin section. It is therefore recommended to detail all information for this section in the “special instructions” box. In the load planning, it must be considered that the relief vents throughout the cabin must remain obstructed.

ii. The LIR will report, in addition to normal information, detailed instructions on:

   A. Load quantity per each cabin section;
   B. Maximum loads for seats, rows, cabin section(s) and/or tie down areas;
   C. The load quantity and maximum load per overhead bin and coat cupboard;
   D. Loading / unloading sequence.

Note: The load controller must ensure that only cargo identified with the special handling code “CIC” (cargo loaded in passenger cabin) be planned for loading in the passenger cabin.

3) Seats remain installed

It is recommended to provide the pilot-in-command (PIC) loading instructions in conjunction with the layout of passenger accommodation (LOPA) and the cargo manifest to ease identification of no loading areas and cabin sections (i.e., Oa, Ob, etc.).

4) Seats are removed

The load controller will generate the LIR that is verified against all new applicable loading limits.

It is recommended to provide the PIC loading instructions in conjunction with the load limitation form and the cargo manifest to ease identification of no loading areas cabin sections (i.e., Oa, Ob, etc.).

5) Load control
The load controller shall account for the weight limits and distribution of cargo on passenger seats, respecting all structural and weight distribution as usual. The final load sheet shall be verified further and in full to ensure the operational limits are respected.

Any notification of changes in the configuration, such as a reduction in the quantity of potable water on board due to no passengers, the correct dry operating weight and index shall be used.

6) Documentation and messaging

In addition to the load sheet, it is also recommended to provide details of the cargo (cargo manifest) loaded in the cabin to the pilot-in-command. Load (LDM) and container/pallet distribution (CPM) messages must include the CIC code.

7) Flight Dispatch

Consideration should be given to specifying in the flight plan and in the corresponding notifications that it is a cargo-only flight to ensure no passenger related overflying and landing restrictions are unduly applied.

f. Loading and unloading on aircraft

Typically, equipment designed to access aircraft passenger cabin doors is not meant to be used for loading cargo. Nevertheless, all possible measures will be in place to prevent injury to personnel and damage to aircraft.

The recommended equipment is:

1) elevating equipment (the same as those used for transporting persons with reduced mobility (PRM); and
2) passenger stairs.

Elevating equipment, which is typically used for boarding and loading either PRM and/or catering, can be also used for loading cargo safely in the passenger cabin through the passenger doors.

When using passenger stairs to load cargo into the cabin, the size and weight of each package to be loaded must be taken into consideration. It is recommended to distribute loading personnel at different positions on the stairs and proceed to load the shipments by moving the packages from the ramp upwards, passing the packages from one person to the next. This recommendation is intended to mitigate the risk of slips, trips and falls.

When possible (e.g., more than 2 access doors), more than one piece of equipment can be used simultaneously. Belt loaders and high loaders are not designed to dock to an aircraft cabin door. Nevertheless, where use of such equipment is being considered, the risks of falling from height and causing aircraft damage must be adequately mitigated. Specific operating procedures developed for this type of loading/unloading by ground handlers shall be approved by the operator prior to being implemented.

Chapter H – Loading and restraint of cargo in the cabin

a. Loading in passenger cabin with seats installed

Where an operator has received approval from the CAA to load cargo on passenger seats, the operator must comply with all requirements applicable to cargo restraint systems on such seats.

1) It is recommended to cover all seats with a protective material;
2) The number/type of restraint devices and their attachment points must be capable of restraining the cargo in accordance with applicable certification specifications;
3) Keep passenger cabin relief vents unobstructed;
4) All aisles, and access to emergency equipment must always remain free of obstructions;
5) The cargo load shall not extend above the height of the seat back, which must be in the fully upright position.
6) It is essential that the loading sequence as reported in the loading instruction report (LIR) be followed. As a general rule, loading of the cabin will always start from the front (FWD) to the back (AFT). It will be unloaded from the back (AFT) to the front (FWD);
7) Avoid stowing heavy packages and/or shipments with sharp edges;
8) Ensure seatbacks are in the upright position;
9) Position the seat belts behind the seat cushions;
10) Where possible, fold up the inner arm rests.
11) Follow installation instructions provided by bin or cargo seat bag (CSB) manufacturer;
12) Ensure all bins/bags (CSB) are properly secured, and straps are latched and tensioned across the seat.

Fig. 1: example of installed CSB ready to be loaded
Fig. 2: example of cargo CSB and secured

Note: Additional information for CSB may be found in SAE ARP 4049

Additional requirements to load aircraft cabin without the use of CSB:
1) Cover all seats with a protective material;
2) Ensure that cargo shipments are accessible to the crew in case of emergency;
3) Secure cargo in each seat row with straps, rope or nets.
4) Stow heavier boxes as low as possible to keep the vertical GC within the limits;
5) Stow the heavier shipments as low as possible (close to the floor of the aircraft) to keep
the GC within acceptable limits;

6) Distribute the load in a manner to reduce lateral CG imbalance.

Note - Passenger seats on the main deck are mounted in tracks that extend along the passenger cabin at floor level. Ensure that the net attachment fittings—commonly called single or double stud fittings—are compatible with the seat attachment tracks. Typically, studs that fit the aircraft seat rails meet the MS33601A standard.

Example of an aircraft seat rail

Example of stud MS33601A

b. Loading in passenger cabin without seats installed

For general loading restrictions, adhere to limitations described in Chapter D, (d) (2) of this document.

Note: Specific tie down procedures per aircraft type shall be developed according to aircraft manufacturer recommendations.

Chapter I – Passenger cabin operations

a. The responsibilities of cabin crew and any other personnel in the passenger cabin must be clearly defined. A person must be nominated as the "person in charge" who is responsible for all coordination and communications during any emergency situation;

b. All cabin personnel shall be familiar with the correct methods and means of restraint;

c. Ensure in-flight entertainment (IFE) systems, electrical seats and/or seat power systems, unused galley systems, and any other heat generating systems that are not required for the operation of the aircraft, are isolated and an appropriate entry made in the aircraft technical logbook.

d. Cabin fire watch and fire-fighting procedures may need to be amended in order to increase frequency of checks inflight and to allow fire-fighting procedures to be accomplished with fewer cabin personnel.

e. Other normal operating procedures, and those applicable under abnormal situations, such as: pre-flight emergency equipment checks, door arming/disarming, emergency evacuation, pilot incapacitation, sterile flight deck and flight deck monitoring, should be reviewed as appropriate.

f. The number of cabin personnel carried should be determined by consideration of:

i. the size of the passenger cabin;

ii. the duration of the flight;

iii. the amount and type of cargo carried in the passenger cabin; and

iv. the number of persons required to carry out normal, unusual and emergency cabin
procedures.

g. Loading of cargo in the passenger cabin shall be carried out in such a manner as to:
   i.  ensure visibility, identification and access to any source of smoke or fire;
   ii. introduce fire breaks within the cabin;
   iii. ensure relief vents are not obstructed;
   iv. ensure decals indicating the location of emergency equipment are not obstructed;
   v.  ensure emergency equipment is not obstructed; and
   vi. ensure aisles and evacuation routes are clear.

h. It is recommended that cabin personnel perform checks to validate that loading has been carried out correctly, and raise any concerns with the pilot-in-command.

i. It is recommended that the pilot-in-command perform a visual and/or physical check of passenger cabin loading before accepting the final cargo sheet.

j. All cabin personnel must be properly trained in cabin monitoring/checks and fire-fighting activities, including all associated operating procedures for coordination/communication and use of appropriate equipment.

k. The load master (or equivalent) must supervise the loading and unloading of cargo in the passenger cabin.

Chapter J – Risk management

a. For the transport of cargo in the passenger cabin, it is necessary, as in other aviation-related areas, to implement the basic principles of safety management. Risk management is of particular relevance, due to the adoption of flexible measures to facilitate the operation of the aviation system during this severe global crisis. Therefore, it is necessary to conduct a comprehensive analysis of operational risks related with the requirements that enabled the transport of cargo in the passenger cabin when temporary exemptions were applied, as well as the need to establish mitigation measures and essential considerations in the decision-making process.

b. A comprehensive analysis must be conducted of operators requesting the flexibility to allow aircraft that regularly carried passengers to now carry cargo in the cabin, without the application of a supplemental type certificate (STC) due to the situation caused by the COVID-19 pandemic.

c. To facilitate the understanding of the above, Appendix A contains a sample matrix showing the results of the easing scenario analysis, which identifies possible hazards, the risk level, and risk mitigation, in order to assist operators in the development of their corresponding risk matrices.

d. Appendix B provides examples of likelihood and severity tables, as well as risk management matrices, that can be used for the risk assessment of the matrix presented in Appendix A.

Chapter K – Security

a. All cargo shall be subject to the required security procedures (as stipulated by national regulations).

b. All AVSEC checks in the passenger cabin shall be accomplished in accordance with national regulations.
c. It is recommended that the operator review the inspection areas subject to cabin check procedures, depending on aircraft configuration. For example, if passenger seats are to be removed, checks around the seats will no longer be applicable.

d. To avoid redundant checks of certain areas or compartments, and once all initial checks in the specific areas have been carried out in a thorough and detailed manner, the operator may choose to use tamper-evident security seals. For example, aircraft lavatories. If all aircraft lavatories have already been checked, but it is known that only one of them will be used during the flight and in transit, those that will not be used can be locked with a tamper-evident seal. Subsequently, only the seal will be visually inspected during the physical check, verifying that it is not damaged. If it is found that a seal has been broken or tampered with, the lavatory must be opened and checked again.
## APPENDIX A

### Safety risk matrix for the transport of cargo in the passenger cabin

<table>
<thead>
<tr>
<th>Exemption</th>
<th>Process</th>
<th>Hazard identification</th>
<th>Possible consequences</th>
<th>Guidance for risk index calculation</th>
<th>Possible mitigations</th>
<th>Operational considerations during contingency period</th>
<th>Considerations before resuming normal service</th>
<th>Operational considerations during the first months of normal service</th>
</tr>
</thead>
</table>
| Transport of critical cargo supplies, such as food and medical supplies, in the passenger cabin | Management of change - Loading operations | Forced flight path deviation | Landing denial due to concern over presence of passengers on board, which could cause that:  
- The aircraft runs out of fuel.  
- Hull loss. | The probability will depend on the number of events the operator has recorded in its SMS  
The severity will depend on the level of implementation of mitigations and operational considerations before and during operations | Report in the flight plan that the aircraft carries cargo only and no passengers on board  
- Ensure that only crew authorised as per the procedure set forth in the operations manual are on board the aircraft.  
- Ensure that the flight plan states that only critical cargo supplies (food and medical supplies) are being carried, and that no passengers are on board.  
- Confirm that the destination airport is aware of the flight | The operator will work in conjunction with the CAA on the recovery plan for the orderly resumption of normal operations after this crisis. | Reactivate passenger-only aircraft operations  
No cargo carried in the passenger cabin, unless covered by a supplemental type certificate (STC) |
| Transport of critical cargo supplies, such as food and medical supplies, in the passenger cabin | Management of change – Transport of cargo in the passenger cabin | Transport of dangerous goods inside critical cargo supplies | Presence of fire.  
- Filtration of corrosive material. | The probability will depend on the number of events the operator has recorded in its SMS  
The severity will depend on the level of implementation of mitigations and operational considerations before and during operations | Train staff in dangerous goods, so that they can identify them if hidden or undeclared.  
- Train and qualify personnel designated for this purpose, on the functions to be performed in the passenger cabin.  
- Follow ICAO provisions on transport of dangerous goods set out in Doc 9284.  
- Comply with the standard operating procedures developed for the transport of cargo in the passenger cabin.  
- Train personnel in the transport of cargo in the passenger cabin. | The operator will work in conjunction with the CAA on the recovery plan for the orderly resumption of normal operations after this crisis. | Reactivate passenger-only aircraft operations  
No cargo carried in the passenger cabin, unless covered by a supplemental type certificate (STC) |
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<tr>
<td>Transport of critical cargo supplies, such as food and medical supplies</td>
<td>Management of change – Transport of cargo in the passenger cabin</td>
<td>Undeclared or hidden dangerous goods (including high energy items)</td>
<td>Fire in cargo compartment</td>
<td>The probability will depend on the number of events the operator has recorded in its SMS</td>
<td>Comply with standard operating procedures developed for the transport of cargo in the passenger cabin.</td>
<td>The operator will work in conjunction with the CAA on the recovery plan for the orderly resumption of normal operations after this crisis.</td>
<td>Reactivate passenger-only aircraft operations. No cargo carried in the passenger cabin, unless covered by a supplemental type certificate (STC).</td>
<td></td>
</tr>
<tr>
<td>Transport in the passenger cabin of critical cargo supplies such as food and medical supplies</td>
<td>Management of change – Transport of cargo in the passenger cabin</td>
<td>Improper loading and distribution</td>
<td>The probability will depend on the number of events the operator has recorded in its SMS</td>
<td>Cargo loading/ fastening recommendations from manufacturers</td>
<td>Manufacturer recommendations contained in the manuals accepted by the CAA must be part of training courses. Only trained personnel working with competent staff will be in charge of cargo stowage / restraint</td>
<td>The operator will work in conjunction with the CAA on the recovery plan for the orderly resumption of normal operations after this crisis.</td>
<td>Reactivate passenger-only aircraft operations. No cargo carried in the passenger cabin, unless covered by a supplemental type certificate (STC).</td>
<td></td>
</tr>
<tr>
<td>Transport of critical cargo supplies,</td>
<td>Management of change – Incorrect cargo information</td>
<td>Transport of dangerous goods</td>
<td>The probability will depend on the number of events</td>
<td>100% verification of contents of cargo to be loaded in the passenger cabin</td>
<td>The operator will work in conjunction with the CAA on the recovery plan for the orderly resumption of normal operations after this crisis.</td>
<td>Reactivate passenger-only aircraft operations. No cargo carried in the passenger cabin, unless covered by a supplemental type certificate (STC).</td>
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| such as food and medical supplies, in the passenger cabin | Transport of cargo in the passenger cabin | • Improper loading  
• Fire, filtration, leakage  
• Corrosive material or liquid leakage compromising aircraft systems | the operator has recorded in its SMS  
The severity will depend on the level of implementation of mitigations and operational considerations before and during operations | • Weigh and balance and loading standard operating procedures  
• Training of loading personnel  
• Prohibition of carriage of dangerous goods in the passenger cabin | • Additional information to acceptance, warehouse and ramp staff on identification of dangerous goods  
• Follow ICAO provisions on the transport of dangerous goods set out in Doc 9284 (acceptance controls) at cargo acceptance to check for undeclared dangerous goods  
• Development and distribution to staff of load control information bulletin on loading and segregation requirements for dangerous goods  
• Ensure that flight crew is familiar with the information bulletin developed by the operator concerning labelled dangerous goods | the orderly resumption of normal operations after this crisis. | • No cargo carried in the passenger cabin, unless covered by a supplemental type certificate (STC) |
| Transport of critical cargo supplies, such as food and medical supplies, in the passenger cabin | Management of change – Transport of cargo in the passenger cabin | Excessive weight | Local structural failure of floor/ seat/ bulkheads that will cause major equipment damage | The probability will depend on the number of events the operator has recorded in its SMS  
The severity will depend on the level of implementation of mitigations and operational considerations before and during operations | Follow manufacturer recommendations | • Follow weight and balance and loading standard operating procedures | The operator will work in conjunction with the CAA on the recovery plan for the orderly resumption of normal operations after this crisis. | • Reactivate passenger-only aircraft operations  
• No cargo carried in the passenger cabin, unless covered by a supplemental type certificate (STC) |
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<td>Transport of critical cargo supplies, such as food and medical supplies, in the passenger cabin</td>
<td>Management of change – Passenger cabin, general</td>
<td>Falling of cargo containing liquid (improper loading)</td>
<td>Uncontained cabin fire</td>
<td>The probability will depend on the number of events the operator has recorded in its SMS</td>
<td>Documented standard operating procedures</td>
<td>Prohibit carriage of liquids in the passenger cabin</td>
<td>The operator will work in conjunction with the CAA on the recovery plan for the orderly resumption of normal operations after this crisis.</td>
<td>Reactivate passenger-only aircraft operations</td>
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<td>Corrosive material or liquid leakage compromising the aircraft systems</td>
<td>The severity will depend on the level of implementation of mitigations and operational considerations before and during operations</td>
<td>Approved training programme</td>
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<td>No cargo carried in the passenger cabin, unless covered by a supplemental type certificate (STC)</td>
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<td>In-flight shift of centre of gravity accompanied by aircraft attitude control problems</td>
<td>The severity will depend on the level of implementation of mitigations and operational considerations before and during operations</td>
<td>Follow ICAO provisions on transport of dangerous goods set out in Doc 9284 to check for presence of undeclared dangerous goods</td>
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<td></td>
<td>Management of change – Passenger cabin, general</td>
<td>Incorrect weight and balance calculation due to removal of passenger seats to accommodate cargo</td>
<td>Exceedance of linear, superficial, cumulative, or combined load limitations</td>
<td>The probability will depend on the number of events the operator has recorded in its SMS</td>
<td>Cabin cargo loading/fastening recommendations from manufacturers</td>
<td>Supplemental type certificate (STC) and/or approval of type certificate by CAA</td>
<td>The operator will work in conjunction with the CAA on the recovery plan for the orderly resumption of normal operations after this crisis.</td>
<td>Reactivate passenger-only aircraft operations</td>
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<td>Incorrect weight and balance for aircraft configuration</td>
<td>The severity will depend on the level of implementation of mitigations and operational considerations before and during operations</td>
<td>Weight and balance and loading standard operating procedures</td>
<td>Develop new weight and balance, loading/unloading procedures and fastening systems to ensure the correct loading of cargo according to the manufacturer</td>
<td></td>
<td>No cargo carried in the passenger cabin, unless covered by a supplemental type certificate (STC)</td>
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<td></td>
<td>Management of change – Passenger cabin, general</td>
<td>Improper cargo loading</td>
<td>Movement of unconstrained or improperly restrained cargo in the passenger cabin beyond the structural capability of floor or bulkheads</td>
<td>The probability will depend on the number of events the operator has recorded in its SMS</td>
<td>Cabin cargo loading/fastening recommendations from manufacturers</td>
<td>Load planner (or equivalent with specific training) oversee the loading and unloading of cargo in the passenger cabin</td>
<td>The operator will work in conjunction with the CAA on the recovery plan for orderly resumption of normal operations after this crisis.</td>
<td>Reactivate passenger-only aircraft operations</td>
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<td>Cargo shift / loss of control due to centre of gravity</td>
<td>The severity will depend on the level of implementation of mitigations and operational considerations before and during operations</td>
<td>Weight and balance and loading standard operating procedures</td>
<td>Awareness/training for cabin crew on restraining systems</td>
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<td>No cargo carried in the passenger cabin, unless covered by a supplemental type certificate (STC)</td>
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<tr>
<td>Transport of critical cargo supplies, such as food and medical supplies, in the passenger cabin</td>
<td>Management of change – Passenger cabin, general</td>
<td>Personnel fall from height</td>
<td>Use of belt loader and/or high loader for loading through passenger cabin doors that could cause death of personnel</td>
<td>(CG) outside of certified weight and balance limits</td>
<td>operational considerations before and during operations</td>
<td>Assign protective equipment to personnel</td>
<td>Provide devices such as safety harness to secure personnel to aircraft and/or equipment (e.g., high loaders), as applicable</td>
<td>The operator will work in conjunction with the CAA on the recovery plan for the orderly resumption of normal operations after this crisis.</td>
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<td>Use of belt loader and/or high loader for loading through passenger cabin doors that could cause aircraft to be unairworthy</td>
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<td>Assign experienced personnel for loading cargo in the passenger cabin</td>
<td>Use most experienced personnel only</td>
<td>Reactivate passenger-only aircraft operations</td>
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<tr>
<td></td>
<td>Aircraft damage</td>
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<td>Use of belt loader and/or high loader for loading through passenger cabin doors that could cause aircraft to be unairworthy</td>
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<td></td>
<td>Assess ground support equipment (GSE) dimension to be used in accordance with aircraft door location, door opening clearances, door dimensions, fuselage shape pitot tubes and/or other aircraft sensor locations</td>
<td>Reactivate passenger-only aircraft operations</td>
</tr>
<tr>
<td>Transport of critical cargo supplies, such as food and medical supplies, in the passenger cabin</td>
<td>Management of change – Passenger cabin, general</td>
<td>Lack of training, or non-compliance with cabin door opening procedures</td>
<td>Inadvertent slide deployment, causing: • injury to persons outside aircraft • fatality</td>
<td>The probability will depend on the number of events the operator has recorded in its SMS</td>
<td>The severity will depend on the level of implementation of mitigations and operational considerations before and during operations</td>
<td>Develop training programme for aircraft loading personnel, including the process of loading cargo in the passenger cabin</td>
<td>Develop training programme for aircraft loading personnel, including the process of loading cargo in the passenger cabin</td>
<td>Use trained personnel</td>
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<td>Continuous supervision during opening and closing of passenger cabin door</td>
<td>Only maintenance personnel or loading personnel (with an aircraft course) under the supervision of maintenance personnel</td>
<td>The operator will work in conjunction with the CAA on the recovery plan for the orderly resumption of normal operations after this crisis.</td>
</tr>
<tr>
<td>Transport of critical cargo supplies, such as food</td>
<td>Management of change – Passenger</td>
<td>Uncontained cabin fire</td>
<td>Overheating of systems in the passenger cabin adjacent to cargo</td>
<td>The probability will depend on the number of events the operator has</td>
<td>Revise operational procedures related to the carriage of cargo in the passenger cabin to turn off entertainment systems, seat power systems, unused galley systems, and any other heat generating</td>
<td>Turn off entertainment systems, seat power systems, unused galley systems, and any other heat generating</td>
<td>The operator will work in conjunction with the CAA on the recovery plan for the orderly resumption of normal operations after this crisis.</td>
<td>Reactivate passenger-only aircraft operations</td>
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<td>Reactivate passenger-only aircraft operations</td>
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<tr>
<th>Exemption</th>
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</table>
| and medical supplies, in the passenger cabin | cabin, general | | | recorded in its SMS  
The severity will depend on the level of implementation of mitigations and operational considerations before and during operations | include steps to be taken to avoid overheating of cabin systems | systems that are not required for the operation of the aircraft | normal operations after this crisis. | unless covered by a supplemental type certificate (STC) |
| Transport of critical cargo supplies, such as food and medical supplies, in the passenger cabin | Management of change – Passenger cabin, general | Uncontained smoke or fire, in the passenger cabin | Undetected smoke or fire, in the passenger cabin | | | | | |
| | | | | The probability will depend on the number of events the operator has recorded in its SMS  
The severity will depend on the level of implementation of mitigations and operational considerations before and during operations | • Lavatory smoke detector  
• Competent personnel constantly monitoring cargo during flight | • Assign cabin crew to carry out enhanced fire watch and fire-fighting procedures as necessary (number of crew will be appropriate to size of aircraft and duration of flight)  
• Limit loading of cargo to ensure visibility, identification of, and access to, smoke/fire source  
• Establish cabin loading procedures to ensure fire breaks within the cabin  
• If using personnel other than cabin crew, they shall be trained on all cabin fire watch/fighting activities (communication, equipment, procedures, etc.) | The operator will work in conjunction with the CAA on the recovery plan for the orderly resumption of normal operations after this crisis. | • Reactivate passenger-only aircraft operations  
• No cargo carried in the passenger cabin, unless covered by a supplemental type certificate (STC) |
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<tr>
<td>Transport of critical cargo supplies, such as food and medical supplies, in the passenger cabin</td>
<td>Management of change – Improper cargo loading</td>
<td>Structural integrity of aircraft compromised • Cabin floor collapse into belly during depressurisation resulting in hull loss</td>
<td>The probability will depend on the number of events the operator has recorded in its SMS • The severity will depend on the level of implementation of mitigations and operational considerations before and during operations</td>
<td>• Develop training programme for aircraft loading personnel, including the process of loading cargo in the passenger cabin • Assign experienced personnel for loading cargo in the passenger cabin</td>
<td>• Cabin cargo loading procedures to ensure depressurisation panels unobstructed as per manufacturer • Load master (or equivalent) to oversee the loading and unloading of cargo in the passenger cabin</td>
<td>The operator will work in conjunction with the CAA on the recovery plan for the orderly resumption of normal operations after this crisis.</td>
<td>• Reactivate passenger-only aircraft operations • No cargo carried in the passenger cabin, unless covered by a supplemental type certificate (STC)</td>
<td></td>
</tr>
<tr>
<td>Transport of critical cargo supplies, such as food and medical supplies, in the passenger cabin</td>
<td>Management of change – Back to service</td>
<td>Minimum equipment list (MEL) non-compliance</td>
<td>Damaged devices and equipment in the cabin, reducing the airworthiness of the passenger cabin</td>
<td>The probability will depend on the number of events the operator has recorded in its SMS • The severity will depend on the level of implementation of mitigations and operational considerations before and during operations</td>
<td>Competent maintenance personnel</td>
<td>Thorough check of all cabin systems, equipment and fittings by maintenance personnel prior to return-to-passenger service</td>
<td>The operator will work in conjunction with the CAA on the recovery plan for the orderly resumption of normal operations after this crisis.</td>
<td>• Reactivate passenger-only aircraft operations • No cargo carried in the passenger cabin, unless covered by a supplemental type certificate (STC)</td>
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<tr>
<td>Transport of critical cargo supplies, such as food and medical supplies, in the passenger cabin</td>
<td>Management of change – Return to service</td>
<td>Incorrect or incomplete cabin cargo loading procedures</td>
<td>• Fall from heights, trips, slips, and bad lifting of cargo due to manual handling • Injuries to employees that could lead to death</td>
<td>The probability will depend on the number of events the operator has recorded in its SMS. The severity will depend on the level of implementation of mitigations and operational considerations before and during operations.</td>
<td>• Provide personal protective equipment (PPE) to personnel. • Develop training programme for aircraft loading personnel, including the process of loading cargo in the passenger cabin. • Assign experienced personnel for loading cargo in the passenger cabin.</td>
<td>PPE, appropriate training, standard operating procedures to prevent fall from heights, trips, slips, manual lifting, proper use of appropriate ground support equipment (GSE)</td>
<td>The operator will work in conjunction with the CAA on the recovery plan for the orderly resumption of normal operations after this crisis.</td>
<td>• Reactivate passenger-only aircraft operations • No cargo carried in the passenger cabin, unless covered by a supplemental type certificate (STC)</td>
</tr>
</tbody>
</table>
APPENDIX B
Examples of likelihood and severity tables and risk assessment matrices

Figure 1: Risk likelihood table

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Meaning</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequent</td>
<td>Likely that an event recorded by the operator in its SMS in relation to the transport of cargo in the passenger cabin will occur many times (more than five)</td>
<td>5</td>
</tr>
<tr>
<td>Occasional</td>
<td>Likely that an event recorded by the operator in its SMS in relation to the transport of cargo in the passenger cabin will occur sometimes (up to two to five)</td>
<td>4</td>
</tr>
<tr>
<td>Remote</td>
<td>Unlikely, but possible, that an event recorded by the operator in its SMS in relation to the transport of cargo in the passenger cabin will occur (has occurred rarely)</td>
<td>3</td>
</tr>
<tr>
<td>Improbable</td>
<td>Very unlikely that an event recorded by the operator in its SMS in relation to the transport of cargo in the passenger cabin will ever occur (not known to have occurred)</td>
<td>2</td>
</tr>
<tr>
<td>Extremely improbable</td>
<td>Almost inconceivable that an event recorded by the operator in its SMS in relation to the transport of cargo in the passenger cabin will ever occur</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure 2: Severity table

<table>
<thead>
<tr>
<th>Severity</th>
<th>Meaning</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catastrophic</td>
<td>Easing for the transport of cargo in the passenger cabin could cause problems during flights under normal conditions. It could also lead to accidents or serious incidents for the operator providing the service.</td>
<td>A</td>
</tr>
<tr>
<td>Hazardous</td>
<td>Easing for the transport of cargo in the passenger cabin could cause problems or limitations during flights under normal conditions, resulting in failures, malfunctions or defects to the operators.</td>
<td>B</td>
</tr>
<tr>
<td>Major</td>
<td>Easing for the transport of cargo in the passenger cabin could cause minor consequences that do not affect safety during flights under normal conditions.</td>
<td>C</td>
</tr>
<tr>
<td>Minor</td>
<td>Easing for the transport of cargo in the passenger cabin does not create any problems or restrictions for the operator in either normal or abnormal conditions.</td>
<td>D</td>
</tr>
<tr>
<td>Negligible</td>
<td>Easing for the transport of cargo in the passenger cabin does not risk affecting people, or damaging the equipment to be operated subject to easing.</td>
<td>E</td>
</tr>
</tbody>
</table>
### Figure 3: Risk assessment matrix

<table>
<thead>
<tr>
<th>Risk likelihood</th>
<th>Risk severity</th>
<th>Description</th>
<th>Recommended action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequent 5</td>
<td>5A, 5B, 5C,</td>
<td>High</td>
<td>Easing for the transport of cargo in the passenger cabin not allowed</td>
</tr>
<tr>
<td></td>
<td>4A, 4B, 3A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occasional 4</td>
<td>4A, 4B, 4C,</td>
<td>Moderate</td>
<td>Risk mitigation: limitations, conditions and recommendations on easing for the transport of cargo in the passenger cabin and ongoing monitoring, operator commitment to report occurrences in a timely manner.</td>
</tr>
<tr>
<td></td>
<td>4D, 4E, 3B,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remote 3</td>
<td>3A, 3B, 3C,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3D, 3E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improbable 2</td>
<td>2A, 2B, 2C,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2D, 2E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extremely improbable 1</td>
<td>1A, 1B, 1C,</td>
<td>Low</td>
<td>Acceptable as is. No further risk mitigation required.</td>
</tr>
<tr>
<td></td>
<td>1D, 1E</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX C
Examples of critical cargo supplies to combat the COVID-19 pandemic

- essential laboratory equipment for detecting coronavirus;
- supplies and tests for detecting coronavirus;
- medical supplies for treatment of people;
- personal protective equipment (PPE) for frontline health workers:
  - face masks,
  - nitrile gloves, and
  - disposable protective clothing sets;
- hospital kits with essential medicines;
- basic emergency kits;
- hand washing stations;
- oxygen concentrators;
- pediatric beds;
- water quality control products;
- hygiene kits;
- water and sanitation kits;
- set of disinfectants;
- water purification tablets;
- sterilisation sets;
- first aid kits;
- public information on how to protect self and others from the virus; and
- non-perishable foods.
APPENDIX D
Actions by Airbus and Boeing

To enable a transport solution under the current COVID-19 crisis, the CAAs of the States of design, as well as the FAA and EASA, have issued guidelines and support to the CAAs of the States of the operator, and for the operators themselves. For permanent use, a change-of-design approval is required.

a. **Actions by AIRBUS**

   Airbus published a general guide for the transport of cargo in the cabin in Flight Operations Transmission FOT 999-0028-20, clarifying the position of Airbus over four (4) possible situations:

   1) Operators willing to transport cargo in existing approved cabin areas
      i. The existing certified cabin areas (underneath the seats, baggage bins) offer approximately 4 tons of additional transport capacity on A320, and 10 tons on A350.
      ii. No approval is required. The operation can start immediately.

   2) Operators willing to transport medical supplies on passenger seats in connection with COVID-19

      The transport of cargo on passenger seats requires a major change in the aircraft type certificate, or an STC. However, national authorities may grant exemptions. EASA issued guidelines for exemptions under Article 71 (1) of Regulation 2018/1139, valid for the duration of the crisis, and not exceeding eight (8) months. The exemption allows for consideration of transport on seats as a minor change limited to the transport of medical supplies. In addition to the information already available in FOT 999-0028-20 and in In-Service Information (ISI) Article Ref. 00.00.00370, Airbus provides, upon request, through a Techrequest at AirbusWorld, additional information to apply for the exemption.

   3) Operators willing to transport non-medical supplies on passenger seats

      Transport of cargo on passenger seats requires a major change to the aircraft type certificate. In the context of the COVID-19 crisis, EASA committed to process major changes or STC applications with priority.

      Several STCs already exist on the market. Operators are reminded that such an operation could lead to damage and significant wear in the cabin.

   4) Operators willing to transport any cargo after removing the seats

      The removal of seats to allow the attachment of cargo to the aircraft structure requires a major change to the aircraft type certificate, or an STC. Airbus created a working group to provide an option for a service bulletin offering a quick solution. This service bulletin will be available shortly.

      The operational aspect of such ad-hoc operations requires reviewing and adapting crew procedures and the load control process.

      In addition, this document provides answers to frequently asked questions related to the transport of cargo in the cabin.

   5) Further information is available in document ISI 00.00.00370 issued on 6 April 2020, and in document 999.0028/20 Rev. 01 dated 8 April 2020 [https://www.icao.int/safety/COVID-19OPS/Pages/ccrd.aspx](https://www.icao.int/safety/COVID-19OPS/Pages/ccrd.aspx)

b. **Actions by BOEING**

   1) Boeing has issued the multiple operator message MOM-20-0239-(B) [https://www.icao.int/safety/COVID-19OPS/Pages/ccrd.aspx](https://www.icao.int/safety/COVID-19OPS/Pages/ccrd.aspx) which is addressed to all Boeing customers, regional directors, managers and field service stations
applicable to the following categories: maintenance, engineering, flight operations, managers, business, safety, regulations, publications/manuals. This message is to provide operators with general guidance on the transport of critical cargo supplies, such as food and medical supplies, as a result of the COVID-19 crisis.

2) Boeing provides the following options that are already approved and certified, as well as other options that will need further assessment and approval.

i. TRANSPORT OF CARGO IN THE LOWER CARGO COMPARTMENT: Airlines can currently operate with cargo transported in the lower cargo compartments, using the existing guidelines.

ii. TRANSPORT OF CARGO IN THE PASSENGER CABIN, EXCLUDING STOWAGE IN PASSENGER SEATS: Requirements associated with the transport of cargo in passenger compartments are described in the United States CFR Title 14, Part 121, Section 121.285. Airlines may operate with cargo transported in approved stowage locations within the compartment or in passenger seat packs. These locations include storage bins, closets, floor-mounted storage, and under-the-seat storage areas.

iii. Additionally, the following must be fulfilled before transporting cargo in the passenger cabin:

   (A) dangerous goods, including lithium batteries, oxygen cylinders, etc., shall not be allowed, in accordance with ICAO guidelines for the passenger cabin;

   (B) no cargo is to be placed in areas that are not intended for storage. Items must not be stowed in lavatories or against bulkheads that are incapable of restraining items against forward, sideways or upward movement, unless the bulkheads carry a placard specifying the maximum capacity;

   (C) maximum storage capacity limitations at, or adjacent to, cargo transport locations are not to be exceeded. All labelled storage limits must be respected, especially those areas identified as "No Storage". The weight (mass) of the cargo must not exceed the structural loading limits of the floor or seats;

   (D) cargo items must be only stowed in places that are incapable of restraining them. Cargo placed in enclosed stowage areas must not be of such a size as to prevent latched doors from being closed securely. The number/type of restraint devices and their attachment points must be capable of restraining the cargo in accordance with applicable certification specifications;
(E) cargo shall not be placed where it can hinder egress in case of an emergency evacuation;

(F) cargo shall not be placed where it can impede access to emergency equipment;

(G) checks must be made before take-off, before landing, whenever the fasten seat belt signs are illuminated as well as under orders of the pilot-in-command to ensure that the cargo is properly stowed. Cargo must not hinder evacuation from aircraft, or cause injury due to falls (or other movement), as appropriate to the phase of flight;

(H) operations without passengers still require crew members to inspect and access all cabin areas during all phases of flight. Any fire that may occur must be detected and suppressed immediately using existing emergency equipment. Specific details should be coordinated with local regulatory authorities;

(I) under the seats, the maximum capacity is 9 kg (20 lb). The seat must be equipped with a restraint bar system and the cargo must be placed fully underneath the seat;

(J) cargo packaging must be capable of equalising pressure to withstand Delta pressure (DP) during the flight;

(K) maintain all smoke and fire detectors as per maintenance manual instructions; and

(L) configure the air conditioning system as follows:

- set the cabin temperature at 65-67°F (18.33-19.44°C)
- configure the maximum number of passengers (if equipped with "passenger dial"), or set packages to Max Flow (if so equipped)