



**CIRCULAR REF:** ECAA/DG/002

**DATE:** 06 July 2020

**Issue No.** 02

**SUBJECT:** CIVIL AVIATION SAFETY CIRCULAR  
TRANSPORT OF CARGO IN PASSENGER COMPARTMENT

**ATTENTION:** Ethiopian air operators transporting cargo on passenger seats in an aircraft passenger compartment certified to carry only passengers, as well as to the transport of cargo in passenger compartments where the passenger seats have been removed for this purpose.

**CANCELLATION:** This civil aviation safety circular cancels the Previous Edition ECAA/DG/002 issued on 15 May 2020.

**PURPOSE**

This Safety Circular provides information and recommendations to operators that hold certificates to conduct operations under ECARAS Part 9. The information and recommendations address considerations when performing safety risk assessments prior to moving cargo in airplanes configured with passenger cabins, in lower cargo compartments, and in the passenger cabin (without passengers onboard). It is an extraordinary situation, however, for an entire passenger cabin to be loaded with cargo.

In accordance with the type certification of the relevant large aeroplanes certified for passenger transport, the passenger cabin is not designed as a cargo compartment and, therefore, it does not meet the applicable requirements for the transportation of cargo. The carriage of cargo in the cabin beyond already approved stowage areas is neither covered by the approval of the aircraft nor by the approval of the seats. Moreover, to compensate for the non-compliance related to smoke detection or fire suppression means, limitations and/or procedures must be introduced.

For airworthiness aspects regarding transport of cargo on seats in the passenger compartment, or transport of cargo in the passenger compartment where seats have been removed, this document provides air operators with technical information to comply with applicable regulatory requirements, when no approved design change exists or related technical investigations are on-going.

This Safety Circular contemplates the following four locations for carrying cargo on airplanes configured with passenger cabins without passengers onboard the airplane:



1. Lower deck cargo compartments.
2. Existing approved stowage locations in the passenger cabin.
3. Passenger seats located in the passenger cabin.
4. Floor of the passenger cabin (passenger seats removed), using seat tracks to tie cargo down.

## 1. BACKGROUND.

Operators that hold certificates to conduct operations under Part 9 may seek to use airplanes configured with passenger cabins to carry cargo only or to carry additional cargo without passengers onboard. While ECARAS Part 8, subpart 8.9.2.15 allows cargo to be transported within the passenger cabin, it did not envision an entire passenger cabin loaded with only cargo, because passenger cabins are not designed for use in an all-cargo configuration.

Air cargo services are vital for the economy and for fighting COVID-19, and Ethiopia's and global supply chains depend on them being operated unhindered. Air cargo should therefore be able to continuously deliver critical products such as food, medical supplies and personal protective equipment (PPE), as well as other products which are vital for the functioning of sensitive supply chains. In order to facilitate the continuation of Air cargo services, which is vital for fighting the COVID-19 crisis, it is essential for the air cargo services not be disrupted so that critical cargo supplies such as food and medical supplies (e.g. masks, gloves, clothing, etc.) can be delivered. Some of the critical cargo supplies may be classified as dangerous goods, and this would need to be taken into account as part of a risk assessment. Due to the increase in demand for the transport of air cargo, currently, underutilized passenger aircraft are increasingly needed to fly the mentioned type of cargo.

Following this, more and more operators are required to fly cargo using passenger aircraft. Before considering such operation, a comprehensive safety risk assessment shall be performed involving all the relevant operational departments (i.e. ground, cargo, cabin, flight, and engineering). Air Operators may also refer to guidelines published by the aircraft manufacturers.

## 2. CARRIAGE AND STOWAGE OF CARGO IN THE PASSENGER CABIN

- 2.1 For the safe operation of cargo in the cabin, the AOC holder must ensure that there is proper management to address changes to the aircraft weight and balance, and possible in-flight emergencies such as cargo dislodge, spillages and smoke and fire.



- 2.2 Modifications may be made to the aircraft for the carriage of cargo in the passenger cabin. For modifications that are classified as “major” as defined in the Ethiopian Civil Aviation Rules & Standards – Part 5 Airworthiness, the AOC holder will require a Supplemental Type Certificate approved by either one or all of the following authorities: FAA, EASA, Transport Canada.
- 2.3 The AOC holder will need to develop and implement a policy for the carriage of cargo in the cabin, which must address at least the considerations in paragraphs 2.4 to 2.40 below.

### **Preparing the Aircraft**

- 2.4 There should be a sufficient quantity of portable emergency equipment such as fire extinguishers and Protective Breathing Equipment (PBE), considering the cargo size, cargo type, persons on board and type of operation (e.g. EDTO). Fire extinguishers and other life-saving equipment should be stowed in accessible locations and marked accordingly.
- 2.5 All smoke and fire detectors shall be maintained as per the applicable Instructions for Continued Airworthiness (ICA) or Component Maintenance Manual (CMM), if modification has been carried out to install such equipment.
- 2.6 Supplemental oxygen systems in the passenger compartment where cargo is stowed should either be deactivated or removed.
- 2.7 Articles under the air operator’s property that are classified as dangerous goods (including fire extinguishers, oxygen bottles and portable devices containing lithium batteries) and that are required to be carried in the passenger compartment for the normal operation of the aircraft or to meet relevant airworthiness requirements may be allowed, subject to approval, and should be repositioned away from areas stowed with cargo.
- 2.8 The air conditioning and pressurization system should be set taking into account the location of crew and cargo on board, and any emergency procedure that utilizes the systems.
- 2.9 To prevent overheating of passenger compartment systems, non-flight essential systems, such as in-flight entertainment systems, seat power systems, unused galley ovens and chiller should be switched off.
- 2.10 Markings or placards should be used to indicate the maximum allowable stowage mass at a given location within the passenger cabin, and identify areas that cargo should not be stowed.

**Preparing the Crew**

- 2.11 There should be sufficient crew members on board whose duties include fire detection and fire-fighting in the cabin. Additionally, sufficient and appropriate safety equipment must be provided for each crew.
- 2.12 The procedures for crew should be heightened to increase vigilance at areas where cargo is carried to ensure that there is no smoke and any potential fire hazard as fire suppression systems are not present in the cabin. When developing these procedures, consideration should also be given to the management of crew's safety whilst they are conducting the inflight checks on cargo. These should include rapid accessibility to emergency equipment.
- 2.13 Proper handling or management of cargo fire, spillage, and leakage should be established through procedures.
- 2.14 Procedures should be developed for the crew to identify areas that are permitted for stowage of cargo, and to verify that cargo are secured properly in the cabin and restraints are used correctly as part of their ground duties, including handling of in-flight loosened cargo.
- 2.15 Crew should be seated at suitable seat locations to maintain visibility of stowed cargo. Crew should not be seated in the same seat row as cargo secured on seats, and there should be at least one empty row of seats between the crew and any seat stowed with cargo.

**Preparing the Cargo**

- 2.16 Cargo designated for loading in the passenger compartment should be adequately packaged to withstand the conditions (including changes to cabin air pressure and vibration) encountered in air transport and the normal handling of cargo by ground staff.
- 2.17 The mass of the cargo packages should be within the maximum allowable mass of its intended stowage location<sup>1</sup> and the cargo dimensions should permit stowage without exceeding the confines of that location. In addition, the shape of the cargo packages should not impede the effectiveness of restraint devices needed to secure the cargo at its intended stowage location.
- 2.18 Cargo intended for loading in the passenger compartment should be inspected to verify their mass, dimension and volume is suitable for loading at the various pre-identified cargo stowage



locations in the passenger compartment to prevent any damage to the aircraft's cabin equipment and interior.

- 2.19 Cargo intended to be stowed on passenger seats should not exceed 70kg. The dimensions of the cargo should not exceed the width of the seat and the height of its seat back. Unless an analysis is carried out to assess if the moment generated by forward inertia for emergency landing conditions is lesser for a cargo loading configuration, the vertical centre of gravity (CG) of the stowed cargo on the seat should be equal or lower than the passenger CG of the seat that is provided by the seat supplier.
- 2.20 Cargo may only be stowed under seats that have a restraint bar system. Each cargo package to be stowed under a seat should not exceed 9 kg and should fit fully underneath the seat.
- 2.21 Cargo packages intended to be secured to the floor of the passenger compartment where seats have been removed, should not exceed the height of 127 cm (which is the typical height of an economy class passenger seat). Additionally, the cargo mass for a given location should not exceed the area and linear load limitation of the floor in the passenger compartment.
- 2.22 Dangerous goods prepared for transport as cargo (including those meeting the excepted quantity provisions of the ICAO Technical Instructions) or in air mail should not be carried in the passenger compartment since the fire detection and suppression systems in this compartment are not designed for the carriage of such goods. Procedures and systemic safeguards should be established to ensure that cargo or air mail containing dangerous goods are not loaded into the passenger compartment.

*Note 1: A stowage location refers to a passenger seat, the floor of the passenger compartment, an overhead compartment or a storage bin designated for stowing cargo in the passenger compartment.*

*Note 2: According to ICAO Technical Instructions, "Dangerous Goods" is defined as Articles or substances which are capable of posing a hazard to health, safety, property or the environment and which are shown in the list of dangerous goods in these Instructions, or which are classified according to these Instructions.*

*Note 3: Restraint devices may include but are not limited to cargo nets, straps, ropes, studs and seat belts.*



- 2.23 Cargo, including all restraint devices, should be weighed and its actual mass communicated to the staff responsible for load planning.
- 2.24 When planning cargo loads in the passenger compartment, the sequence of loading/unloading of cargo into/from various locations of the aircraft should be specified in order to avoid hazards related to imbalance of the aircraft during such activities.
- 2.25 The actual mass of cargo and restraint devices in each seat-zone and the total actual mass of all cargo and restraint devices in the passenger compartment should be accounted for and documented on the load sheet.
- 2.26 Cargo designated for loading in the passenger compartment should be clearly communicated to the staff responsible for loading the aircraft using a Loading Instruction Report (LIR). The LIR should specify the identification and quantity of cargo to be stowed at each location, the actual mass of cargo planned for stowing in each seat zone and maximum allowable cargo mass permitted in each seat zone.

#### **Loading and Stowing the Cargo in the Cabin**

- 2.27 The loading and unloading of cargo in the passenger compartment should be carried out in accordance with the established sequence and the instructions in the LIR, taking into account any changes made to it.
- 2.28 Care should be taken to ensure that aircraft ground stability is maintained at all times during loading and unloading operations.
- 2.29 Checks should be put in place to verify that cargo stowed in the cabin are adequately restrained and tied down, and are to be in compliance with the procedures established in the AOC holder's operations manual and the aircraft manufacturer's manual.
- 2.30 Cargo restraint devices used should be certified to meet airworthiness design standards where available. Cargo nets and cargo straps should meet the TSO-C90 and TSO-C172 design standards respectively, or their equivalents.
- 2.31 Cargo stowed on the floor where seats are removed, should be restrained and secured to the cabin floor seat tracks, such that it can accommodate the ground, flight, turbulence, take-off, landing and emergency landing conditions per 14 CFR 25.561 or CS 25.561, as applicable.



- 2.32 Cargo stowed onto seats must be secured to the seat primary structure, or directly to the cabin floor seat tracks in accordance with the applicable load limitations of each component including the cargo restraint means, such that it can accommodate the ground, flight, turbulence, take-off, landing and emergency landing conditions per 14 CFR 25.561 or CS 25.561, whichever is applicable.
- 2.33 Prior to loading cargo at any location, all cargo packages are to be inspected to verify that there are no markings or labels that would suggest that its contents may contain hidden dangerous goods. Packaging of the cargo should be in a good condition and its contents are not exposed or leaking. Since dangerous goods contained in air mail cannot be identified by markings, labels or through documentation when offered for transport by air, the AOC holder should make special arrangements with designated postal operators if it intends to transport air mail that do not contain dangerous goods in the passenger compartment, to ensure that dangerous goods are not inadvertently carried.
- 2.34 For twin-aisle aircraft in which the seats are not removed, an empty seat row must be provided to allow crossing from one aisle to the other. The empty seat row should be, as much as possible, at equal distances from the cross-aisles required by 14 CFR 25.813 or CS 25.813, whichever is applicable.
- 2.35 Cargo stowed under seats should be strapped securely to the seat primary structure such as the seat leg(s) and/or seat beam(s).
- 2.36 The placement of cargo should allow the crew to have sufficient access to inspect the cabin and respond to incidents of smoke or fire.
- 2.37 Cargo should not be stowed at the emergency exit rows, aisles and/or at any locations that would obstruct access to the emergency exits or to access any emergency equipment in the passenger compartment. Regardless of the aircraft's certified seating capacity, the remaining aisle width after stowage of cargo must not be less than the minimum aisle width specified in the applicable 14 CFR 25.815 or CS 25.815 for the criteria of an aeroplane with a seating capacity of 10 or fewer passengers.
- 2.38 Cargo should not be placed near the cabin depressurization relief vents, to avoid risk of cabin floor collapse in the event of rapid cabin depressurization during flight.



2.39 Cargo stowed in enclosed stowage areas should not prevent latched doors from being closed securely.

2.40 The cargo should not be stowed in such a manner that could obstruct any view of the passenger information signs or the required emergency evacuation signs/escape lighting.

### **3 TRAINING OF PERSONNEL**

3.1 The AOC holder should ensure that appropriate training is provided to the relevant personnel, and to both local and overseas handling agents, to enable them to understand regulatory requirements, policy and procedures, responsibilities and duties as well as limitations related to the carriage of cargo in the passenger cabin.

3.2 All crew assigned for cabin management roles or duties should be trained on safety emergency procedures, use of emergency equipment and standard operating procedures for all phases of flight.

### **4. APPROVALS REQUIRED**

4.1 The AOC holder shall seek ECAA's approval for carriage of cargo, including dangerous goods, in cabin prior to commencing operations. In seeking the approval, the AOC holder must submit a detailed risk assessment to identify hazards, evaluate and mitigate correlated risks related to the carriage of cargo, including dangerous goods that are necessary for airworthiness purposes. The AOC holder must also include in the submission supporting documents from the aircraft manufacturer that provides for the carriage of cargo in the cabin.

4.2 Additionally, the risk assessment should also include a gap analysis of current procedures and the AOC holder should develop required procedures accordingly and must ensure that the responsibilities of crew in the cabin are clearly defined.

4.3 The AOC holder should identify considerations in addition to the ones in paragraphs 2.4 to 2.40 that are required for the carriage of cargo in the cabin, and establish procedures for such operations in its operations manual and aircraft maintenance manuals.

4.4 The AOC holder will need to seek ECAA's approval for any amendment made to the operations manual, Minimum Equipment List, training programmes or checklists prior to commencing operations.



## 5. Transport of Dangerous Goods

### 5.1. Dangerous goods (DG) shall only be transported by Operators holding an approval

- a) In the absence of passengers, the limits for the dangerous goods can be those established in the Technical Instructions for Cargo Aircraft, instead of Passenger Aircraft. The operator shall nevertheless include this aspect in the risk assessment performed.
- b) Additional training/briefing shall be given to the crew members, particularly letting them know whether the limits have been increased from those applicable to passengers to those applicable to cargo. This should, at least, include the following:
  - I. the risks and consequences of increasing the amount of DG in the hold;
  - II. any changes in the emergency procedures and the emergency equipment that may be on board.
- c) Relevant information on dangerous goods (e.g. affecting emergency procedures) shall be included in the briefing given to other people occupying the aircraft.
- d) Dangerous goods shall not be carried in the passenger compartment and must always be carried in the hold and shall be transported under the conditions established by the Transportation of Dangerous Goods regulations.
- e) Nobody other than a crew member, an operator's employee in an official capacity, a Ethiopian Civil Aviation Authority Safety Inspector or an authorized person accompanying a consignment or other cargo may be present on board. Any other person will be considered a passenger and, therefore, the aircraft will no longer be able to use the provisions applicable to cargo aircraft in regards to the transport of dangerous goods.

## 6. Return to passenger service

Before the aircraft is used for passenger service, the operator should ensure the return of the cabin back to the configuration certified for passenger transportation. Operators are reminded that if the operator wishes to make these changes permanent, then a design change approval is required.



## 7. RELATED REFERENCES

EASA Guidelines Document TE.RPRO.00065-003 Issue 4 – Transport of Cargo in Passenger Compartment – Exemptions under Article 71(1) of Regulation 2018/1139 (The Basic Regulation).

FAA SAFO 20008 – Transporting Cargo on Transport-Category Airplanes Configure to Carry Passengers.

Transport Canada Document – Civil Aviation Safety Alert No. 2020-04 Issue 1 – Transport of Cargo in Passenger Compartment.

US Code of Federal Regulations – 14 CFR 121.285 Carriage of Cargo in Passenger Compartments.

Civil Aviation Authority of Singapore Advisory Circular: CARRIAGE OF CARGO IN THE PASSENGER CABIN



**VALIDITY**

This Circular is in effect until the date on which it is cancelled in writing by ECAA, where in the opinion of the Director General that it is no longer in the public interest or is likely to adversely affect aviation safety.

**APPROVAL**

This Civil Aviation Safety Circular on Transport of Cargo in Passenger Compartment is published and approved by Ethiopian Civil Aviation Authority Director General, to provide guidelines for the transport of cargo on passenger seats as well as the transport of cargo in passenger compartments where the passenger seats have been removed for this purpose. Meanwhile, before considering such operation, a comprehensive safety risk assessment shall be performed involving all the relevant operational departments (i.e. ground, cargo, cabin, flight, engineering, etc.).

  
Wossenyeleh Hanogshaw (Gen.)  
Director General

Approved by:

