



## Guidelines for the Transport of Cargo in the Passenger Compartment

Revision 5

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### 1. Request for Approval

- 1.1 Cargo shall only be transported by operators holding valid Cargo transport approvals with aeroplanes certified under the Airworthiness Standard of Large Aeroplanes.
- 1.2 Any operators wishing to apply for an approval to carry cargo in the passenger compartment shall contact the Civil Aviation Authority of Thailand (CAAT) in writing and provide the following:
  - a. Official request letter
  - b. Application for seeking exemption (refer to Annex 3 of this guideline)
  - c. Safety risk assessments with supporting evidences (refer to section 2.1)
  - d. Operating procedures to demonstrate that the requirements set out in this guideline can fully be met.
- 1.3 The allowance to transport cargo in passenger compartment is limited to 2 000 FH per aircraft. The limitation shall be included in the operations manuals.

### 2. Procedures

- 2.1 Safety risk assessments shall be performed in order to identify hazards, evaluate and mitigate correlated risks related to operating cargo flights using cabin configurations which have been approved for transporting only passengers.

Some examples of possible risks include, but are not limited to, the following:

- a. Operator's general knowledge of cargo transport;
- b. The detection of any smoke or fire and firefighting capabilities of personnel in the cabin;
- c. Qualification and abilities of crew member or other personnel to control and put out fire in the cabin;
- d. The provision, location and storage of sufficient firefighting equipment such as portable breathing equipment, fire extinguishers etc. for use by personnel carried in the cabin;
- e. Extended Diversion Time Operations (EDTO)
- f. Mis-declared / undeclared or hidden dangerous goods
- g. Unrestricted access to all cargo shipments
- h. Cargo leakage / spillage
- i. Unsecured / incorrectly loaded cargo
- j. Incorrect loading and unloading sequence
- k. Operational weight and balance limits exceedance
- l. Qualification of ground staff to prepare and load cargo in accordance with applicable regulations and instructions
- m. Occupational Health and Safety (OHS) risks associated with the new procedures.

- 2.2 Checks shall be made before take-off, before landing and whenever requested by the captain to ensure that cargo is properly stowed and secured.
- 2.3 Operators shall establish procedures to manage emergencies in the cabin
- 2.4 Existing procedures, including emergency procedures, must be reviewed and adapted as necessary.
- 2.5 Operators shall publish temporary revisions to the Operations Manual (OM) to include the new type of operations and the related procedures.

### **3. Crew Composition**

- 3.1 Operations without passengers shall still the presence of crew members to survey and access all areas of the cabin during all phases of flight. Any fire that might occur must be timely detected and effectively fought utilizing the available existing emergency equipment.
- 3.2 Crew members in the cabin have to sit on seats which are not located near the cargo.

### **4. Loading, Mitigations for Transport of Cargo in the Passenger Compartment including on Passenger Seats**

- 4.1 Exact cargo weight and position in the cabin and in the cargo hold shall be reflected in the mass and balance documentation (load sheet).
- 4.2 The pilot-in-command shall be provided with information on the content of all the cargo such as through provision of the cargo manifest or other appropriate documentation.
- 4.3 The operator shall load the aircraft considering the different levels of available fire protections of the loading areas. (i.e. passenger cabin and lower deck cargo compartments).
- 4.4 Cargo must be adequately restrained to ensure the cargo does not come loose or shift during flight or emergency landing conditions
- 4.5 For the bulkheads that have a placard indicating maximum capacity, the cargo items stowed in aft of these bulkheads shall not exceed the maximum capacity indicated in the placard.
- 4.6 The maximum capacity limitations in the required safety placards (on or adjacent to the cargo approved stowage locations) shall not be exceeded. All stowage instructions specified in the placards apply.
- 4.7 The mass of the cargo shall not exceed the structural loading limits of the floor or seats, as published in the aircraft documentation (e.g. Limitation chapter of the Weight and Balance Manual). Compliance with EASA CS 25.561, 25.787 and 25.789 or FAA 14 CFR Part 25.561, 25.787 and 25.789 is expected.
- 4.8 The cargo placed in enclosed stowage areas shall not be of such size that they prevent latched doors from being closed securely.
- 4.9 The cargo items shall be stowed only in a location that is capable of restraining it.
- 4.10 The cargo stowage location shall be such that, in the event of an emergency evacuation, it will not hinder aisle access and egress.
- 4.11 The cargo shall not be placed where it can impede access to emergency equipment.
- 4.12 The cargo shall not be placed where it can impede the visual to the safety instruction sign and placard, emergency equipment, exit.
- 4.13 The cargo shall be checked to ensure proper stowage in the following instances (at the minimum):
  - a. Before take-off,
  - b. Before landing,
  - c. Under orders of the Pilot in Command (PIC).

- 4.14 The available aisle(s) shall remain free of cargo to enable access to the cargo to fight a fire.
- 4.15 Any smoke/ fire within the cabin must be easily detected and effectively fought using the existing emergency equipment. Thoroughly briefed crew members (not part of the flight crew) shall be on-board to survey and access all areas of the cabin during all flight phases. There must be an adequate number of trained crew members acting as fire-fighter (not part of the flight crew) with sufficient amount of firefighting equipment. This equipment may be stowed in the cabin using existing stowage provisions (overhead bins, stowage's) provided that the location is identifiable for the crew. Specific details must be coordinated with the CAAT.
- 4.16 Crew members in the cabin should use existing cabin crew seats and must not share seat rows with cargo. There must be a clear separation of areas occupied by occupants and those fitted with cargo during taxi, take-off and landing. At least one empty seat row between cargo and reserved occupant seats must be established.
- 4.17 'Under seat stowage' is allowed only if the seat is equipped with a restraint bar system and the cargo items can be placed fully underneath the seat. The loading of the cargo under each seat should not exceed 9 kg (20 lbs.).
- 4.18 The cargo packaging shall be able to equalize the pressure so that it can handle the Delta Pressure (DP) during the flight, as applicable.
- 4.19 All smoke and fire detectors shall be maintained as per Maintenance Manual instructions.
- 4.20 The Air Conditioning system shall be set taking into account the nature of the cargo transported in the cabin and the number and distribution of cabin occupants.
- 4.21 If nets are used to restrain cargo items, these nets should be European Technical Standard Order (ETSO) approved and any load limitations of these nets including their attachment means should be adhered to. Any deformation of these nets due to the mass of the cargo items restrained under emergency landing, flight or ground loads should be evaluated for contact to other objects in the cabin and be shown not to block emergency evacuation paths nor access to emergency equipment.
- 4.22 The effectiveness of the cargo loading instructions should be evaluated in a demonstration performed on an aeroplane or in a mock-up representative of the passenger cabin. As minimum, a demonstration needs to be conducted every time new loading instructions or as appropriate (i.e. not previously reviewed and accepted by CAAT) are proposed.

The scope of the demonstration should also include the evaluation of the following items:

- Access to cargo areas and other stowage facilities (overhead bins, stowage compartments) for fire-fighting.
- Dimensions of longitudinal aisles and transversal corridors.
- Trip hazard generated by the cargo installation.
- Firm handhold availability.
- Capability to retrieve the emergency equipment required for fire-fighting.

## **5. Airworthiness Aspects for Transport of Cargo in the Passenger Compartment**

- 5.1 Operators may transport cargo in the passenger compartment without design change approval as long as the cargo is placed in the approved stowage locations within the passenger compartment as follows:
- a. Overhead stowage bins
  - b. Stowage compartments

- c. Floor mounted stowage (e.g. doghouses)
  - d. Bulkheads that have a placard indicating maximum capacity
  - e. Under seat stowage areas
- 5.2 The temporary transportation cargo in the passenger compartment including on passenger seats shall only be approved when the operator can demonstrate that the conditions described in 4. and the technical guidance which can be found in Annex 1 of this guideline document can be fulfilled. A design change approval is not a prerequisite for the issuance of an Exemption. However, certain design data may support the process.

## **6. No Exemption for Transport of Dangerous Goods**

- 6.1 Dangerous goods (with an exemption to vaccines cooled by dry ice) shall not be carried in the passenger cabin and always be carried in the hold and shall be transported under the conditions established by the Technical Instructions.
- 6.2 Operators need to be cautious of potential hidden dangerous goods that medical supplies and similar cargo shipments may contain.

It is recommended that ‘Transport of Cargo in the Passenger Compartment’ guidelines by EASA for the required process, including but not limited to the content of the safety risk assessment, crew composition and procedures, and other aspects should be referred to.

Documents published by the industry (aircraft Original Equipment Manufacturers (OEM), SAE) to provide guidance on how to transport cargo in the passenger cabin are referenced in Annex 2.

For more information for transportation of vaccines using dry ice can be found on CAAT Guidance Material for Transportation of COVID-19 Vaccines.

## Annex 1

### 1. Further Guidance for Transport of Cargo in the Passenger Compartment

The following guidance addresses in general the transport of cargo on seats, on the cabin floor with seats installed or with seats removed.

Primary objectives to be achieved when using of the passenger cabin for transport of different kind of cargo are:

- a. Timely fire detection, effective fire-fighting and adequate protection of the occupants from hazardous quantities of smoke and toxic gases;
- b. Fixation of cargo to ensure occupant safety and prevent changes of aircraft center of gravity, accounting for the structural strength and integrity in normal and emergency conditions;
- c. Emergency evacuation of occupants.

An applicability list of the below listed areas - depending on the kind of cargo – is provided in Table 1.

#### 1.1 Restrictions to the Kind of Cargo:

The transportation of the following cargo in the cabin shall be prohibited:

- a. Dangerous goods (with an exemption to vaccines cooled by dry ice dealt with in CAAT Guidance Material for Transportation of COVID-19 Vaccines);
- b. Mail;
- c. Batteries, including batteries contained in, or packed with, equipment;
- d. Cargo of a piercing, dense, rigid, or penetrating nature, or cargo with sharp edges or corners, such as rods, pipes, extrusions, or beams, that could become a projectile hazard during flight operations;
- e. Live animals.

#### 1.2 Cabin Preparation:

- a. Passenger convenience systems (IFE, in-seat power, galley systems and any other heat generating systems) in the cabin areas in which cargo is transported will have to be disabled or deactivated.
- b. Automatic supplemental oxygen systems in the cabin areas in which cargo is transported will have to be removed from the PSU channels, without leaving any opening, or shall be deactivated.

Note: Chemical O2 generator or decentralized gaseous O2 installed in the PSU channel will start the O2 generation or O2 release when certain temperatures are reached. Based on the possible fire scenario originating from the cargo loaded the O2 systems would need to be removed or deactivated (O2 mask drop prevented to keep the shielding from the container doors).

- c. Cargo shall not be stowed in any compartment containing oxygen bottles and/or PBEs, as well as devices containing lithium batteries.

#### 1.3 Cargo Loading:

- a. It is not required to install a 9g barrier and a smoke barrier to protect the flight deck and cabin occupants. Cargo shall be restrained so that each cargo installation meets airworthiness standard EASA CS 25.561 or FAA 14 CFR Part 25.561 and other applicable structural requirements.
- b. In each section of the cabin where cargo is transported:





## 1.4 Safety Equipment

- a. Portable oxygen equipment must be provided for each crew member whose duties on board include fire detection and fire-fighting in the cabin. The equipment shall meet airworthiness standard EASA CS 25.1439 (b) (1),(2) and 25.1443 (e) or FAA 14 CFR Part 25.1439 (b) (1),(2) and 25.1443(e) , and shall be carried by the crew members during their inspections.
- b. Appropriate protective garments (e.g. fire gloves, etc.) shall be stored adjacent to the crew member's stations.
- c. In addition to the extinguishers already installed in the cabin, the need for additional firefighting capabilities should be evaluated by considering the cargo to be transported (e.g. expected class of fire).  
The following additional fire extinguishers would provide adequate firefighting capabilities in case of no cargo restrictions other than no dangerous goods on the passenger deck:
  - Two Underwriters Laboratories (UL)2A (2-1/2 gallon) rated water portable fire extinguishers, or an equivalent amount of water, and
  - At least two fire extinguishers with a minimum UL 4A-80B:C rating or equivalent. Four UL 2A-10B:C extinguishers is considered equivalent.
- d. Extinguishers should be located next to fire-fighters station(s) or at other locations that the operator determines would be more effective in providing fire protection.

## 1.5 Environmental Control System (ECS) Settings

### Normal Procedures

ECS settings shall be adapted considering the number aircraft occupants. If the ECS system is configured with Gasper outlets they should be in close / off position at all phases of flight.

### Emergency Procedures

In the event of a fire in the cabin it should be ensured that the ventilation system is set to low flow. The existing Smoke, Fire, Fumes FCOM procedures (which includes possible divert, don oxygen masks, establish crew communications, re-circulation fans switched off, Smoke Fumes Checklist) must be followed.

## 1.6 Procedures and documentation:

Existing procedures, including emergency procedures, must be reviewed and adapted as necessary.

The Airplane Flight Manual (AFM) shall be revised as required to include the following:

- a. Minimum number of additional crew members in the cabin:
  - Minimum of two additional crew members whose duties are to detect and fight a fire, and relay information to the flight crew.
  - For twin aisle and other large long range airplanes, a minimum of 3 additional crew members will likely be needed. Additional crewmembers above 3 should be justified based on a risk assessment.  
The number of cabin occupants should be minimized to the number necessary to satisfy item 1.
- b. The additional crew members must be trained on:
  - Fire-fighting procedure
  - Use of the emergency equipment, including portable oxygen systems
  - Operation of emergency exits and evacuation procedures
- c. The additional crew members must make a visual inspection of the cargo on a regular basis including prior to Taxi, Take-off and Landing (TT&L).
- d. When making the inspection required above, the additional crew members must carry portable oxygen equipment (see section Safety Equipment).
- e. Provisions must be available to allow the flight crew members to notify the crew members in the cabin in case of a decompression.
- f. Seats that must be occupied during TT&L and emergency scenarios such a turbulence or decompression (possibly ensuring visibility of cargo).
- g. A new cabin fire emergency procedure based on manual fire-fighting.

## 2. Return to Passenger Service

Before the aircraft is used for passenger service, the operator shall 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.

<b>Applicability of sections in Annex 1 depending on the restrictions to the kind of cargo</b>			
	<b>Restrictions to the kind of cargo</b> As per paragraph 1.4	<b>Restrictions to the kind of cargo</b> Positive list of kind of cargo	<b>Restrictions to the kind of cargo</b> Medical supplies only
<b>Cabin preparation</b>	✓	✓ (except that deactivation/removal of supplemental oxygen systems may not be required, depending on the type of cargo)	N/A
<b>Cargo loading</b>	✓	✓	✓
<b>Safety equipment</b>	✓	✓ (with adaptations, as appropriate, depending on the type of cargo transported in the cabin)	✓ (with adaptations, as appropriate)
<b>ECS settings</b>	✓	✓ (with adaptations, as appropriate)	✓
<b>Procedures and documentation</b>	✓	✓ (with adaptations, as appropriate)	✓ (with adaptations, as appropriate)
<b>Appendix to Annex 1</b>	✓	✓	✓

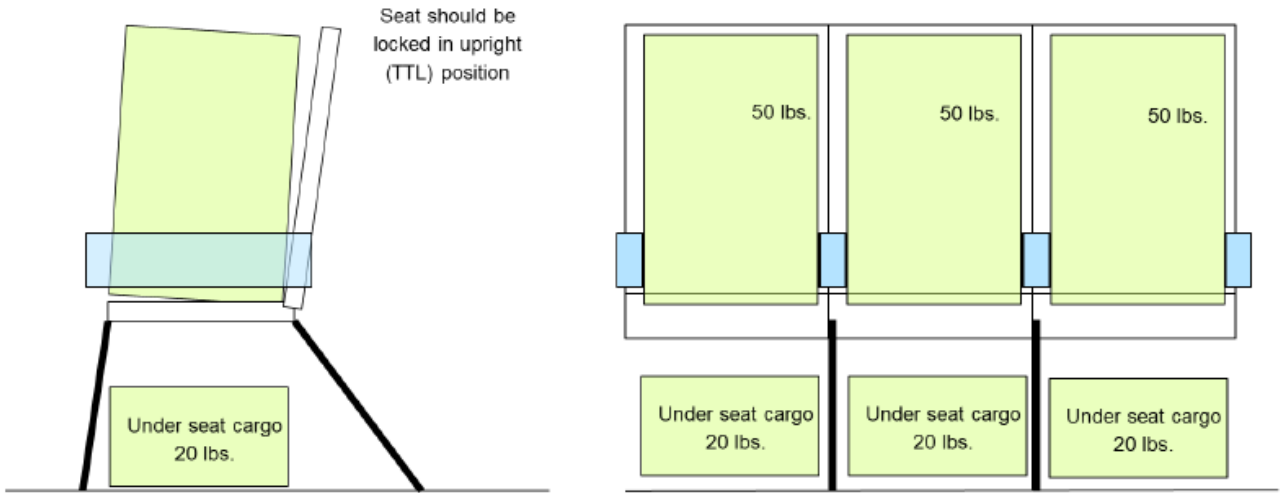
Table 1 - Applicability of sections in Annex 1 depending on the restrictions to the kind of cargo.

Appendix to Annex 1

Example for loading cargo on seats

Interim cargo carriage on seat for 3 boxes maximum 22.5kg (50 lbs)

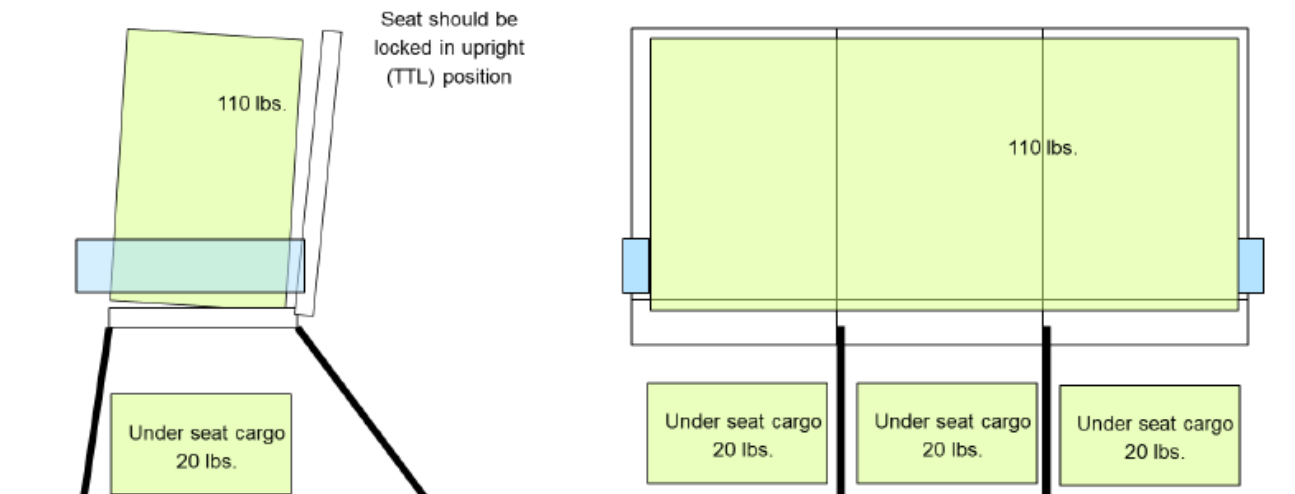
Maximum height of cargo not higher than top of seat backrest.



Interim cargo carriage on seat for 1 box maximum 50kg (110 lbs)

Maximum height of cargo not higher than top of seat backrest.

Cargo restraint means are not shown.



## Appendix 2 to Annex 1

### Recommended Procedures for Loading and Unloading Cargo

The below recommended procedure is an example. The recommended loading / unloading sequence depends on the aircraft type.

#### Sequence for loading:

- First, load the lower forward cargo compartment
- Next, load the main deck from the front to the back
- Last, load the lower center/aft cargo compartments (lower cargo compartment aft of the wing)

#### Sequence for unloading:

- Reverse order from loading sequence

## Annex 2 – Industry Guidance

The following documents were sent by certain aircraft Original Equipment Manufacturers (OEM) to provide guidance on how to transport cargo in the passenger cabin:

- Airbus SAS : FOT-999-0028-20-00
- ATR: OIM2020/003
- The Boeing Company : MOM-MOM-20-0239

Guidance on how to restrain cargo on seats can be found in SAE ARP 4049 Cargo Restraint on Aircraft Passenger Seats – Main Passenger Cabin.

**Annex 3 – Application for Seeking Exemption**

**1. DETAILS OF APPLICANT**

- 1.1 Name of Applicant/ Organization.....
- 1.2 License/ Certificate/Approval Number .....
- 1.3 Full name of applicant (in capital letters) .....

**2. DETAILS OF EXEMPTION SOUGHT**

2.1 Relevant provisions of the Air navigation Act or the Regulations for which exemption is sought: .....

2.2 The category under which exemption sought:

- TEMPORARY       PERMANENT

2.3 Reasons why the exemption is needed (The reasons provided should be detailed and self-explanatory)

.....  
 .....  
 .....

2.4 Period for which exemption is required..... Days/Months

2.5 If the exemption will affect a particular kind of operation, the details thereof.....

.....

2.6 For temporary exemption, the action plan for rectification and review of noncompliance, including the mitigation measures adopted for ensuring the safety during the exemption period:

.....  
 .....  
 .....

2.7 For permanent exemption, the mitigation measures adopted to ensure safety of aircraft operation. Complete safety assessment report shall be enclosed:

.....  
 .....  
 .....

2.8 What factors were considered by the applicant in the determination of Public Interest?

- a) .....
- b) .....
- c) .....

(If required additional page(s) may be included.)

Are conditions related to Public Interest required?

.....  
 .....  
 .....

2.9 What factors were considered by the applicant to ensure equivalent level of Safety? Identify criteria and formulate as conditions of the exemption:

- a) .....
- b) .....
- c) .....

(If required additional page(s) may be included.)

I hereby certify that the forgoing information is correct in every respect and no relevant information has been withheld. I also undertake the responsibility for annually reviewing the conditions or mitigation measures and any other resultant non-compliance in particular when any significant changes in the aerodrome activity and development are proposed.

\_\_\_\_\_  
 SIGNATURE OF APPLICANT

NAME.....  
 (in capital letters)  
 DATE.....  
 POSITION HELD.....  
 (with official seal)

Note:

- i) It is an offence to make any false representation with the intent to deceive, for the purpose of obtaining exemption
- ii) Application not completed in all respect and not accompanied with relevant enclosures is likely to be rejected.