Australian Government
Civil Aviation Safety Authority

MULTI-PART ADVISORY CIRCULAR AC 91-19, AC 121-04, AC 133-10, AC 135-12 AND AC 138-10 v1.4

Passenger safety information

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December 2025

Acknowledgement of Country

The Civil Aviation Safety Authority (CASA) respectfully acknowledges the Traditional Custodians of the lands on which our offices are located and their continuing connection to land, water and community, and pays respect to Elders past, present and emerging.

Artwork: James Baban.

Advisory circulars are intended to provide advice and guidance to illustrate a means, but not necessarily the only means, of complying with the Regulations, or to explain certain regulatory requirements by providing informative, interpretative and explanatory material.

Advisory circulars should always be read in conjunction with the relevant regulations.

Audience

This advisory circular (AC) applies to:

- operators and owners of aircraft carrying passengers
- crew members
- passengers.

Purpose

This AC provides guidance regarding the requirements for safety briefing cards and passenger safety briefings, instructions and demonstrations for operations that fall under Parts 91, 121, 133, 135, and 138 of CASR.

The purpose of this AC is to:

- provide guidelines for the safety information to be provided to passengers by aircraft operators
- assist operators with the design and development of passenger safety information
- highlight items that are required to be or should be covered in oral, written and visual media used by the operator in relaying that information to passengers
- help ensure the survival prospects of passengers are not jeopardised because of deficiencies and inaccuracies with safety information briefings.

Note: ICAO guidance on the safety-related information and instructions that an operator should provide to passengers is contained in the Manual on Information and Instructions for Passenger Safety (Doc 10086). Excerpts from that manual are contained throughout this AC along with images of brace positions from the International Board for Research into Aircraft Crash Evaluation (IBRACE) that were provided to ICAO for inclusion in that manual.

For further information

For further information or to provide feedback on this AC, visit CASA's contact us page.

Unless specified otherwise, all subregulations, regulations, Divisions, Subparts and Parts referenced in this AC are references to the *Civil Aviation Safety Regulations 1998 (CASR)*.

Status

This version of the AC is approved by the National Manager, Flight Standards Branch.

> **Note:** Changes made in the current version are annotated with change bars.

Table 1: Status

Version	Date	Details
v1.4	December 2025	Notable changes include: • addition of relevant ICAO documents in section 1.3 • updated references to current Cabin Safety Bulletins (CSBs) in section 1.3 • addition of TIG Powerbank Research Report (22 May 2025) to other references in section 1.3 • additional details added to safety briefing cards, section 3.2.6 • additional details added to paragraph 6.12.4 regarding emergency evacuation considerations • new Appendix B containing recommended visual safety messaging pertaining to power bank charging and stowage in aircraft • new CASA style template applied.
v1.3	August 2024	Arising from recent domestic and foreign accidents, content has been amended and added to emphasise the following matters: • In Sections 2 and 4, the need for safety briefings to focus on passenger retention of key safety messages to enhance survivability. • In Section 5, the need for pilots and operators to ensure that the simultaneous use of safety equipment, such as seatbelts and lifejackets, takes into account preserving the correct operation of both pieces of equipment.
v1.2	July 2024	Change to section 3 regarding certain smaller sized aircraft using a single safety briefing card to depict different equipment locations instead of a single location.
v1.1	February 2023	Inserted a new section A.14 into the Appendix encompassing recommended brace positions for helicopters with '3-point' harness (lap strap and single diagonal strap). Existing sections A.14, A.15, A.16, A.17, A.18 and A.19 renumbered to A.15, A.16, A.17, A.18, A.19 and A.20.
v1.0	August 2021	This Multi-Part AC replaces CAAP 253-2(2) - Passenger safety information: Guidelines on content and standard of safety information to be provided to passengers by aircraft operators

Contents

1 Reference material

1.1 Acronyms

The acronyms and abbreviations used in this AC are listed in the table below.

Table 2: Acronyms

Acronym	Description
AC	Advisory Circular
ABP	able-bodied passenger
CAA NZ	Civil Aviation Authority of New Zealand
CAAP	Civil Aviation Advisory Publication
CAR	*Civil Aviation Regulations 1988*
CASA	Civil Aviation Safety Authority
CASR	*Civil Aviation Safety Regulations 1998*
CAO	Civil Aviation Order
CRS	child restraint system
CSB	Cabin Safety Bulletin
FAA	Federal Aviation Administration
IATA	International Air Transport Association
IFE	inflight entertainment
ISO	International Organization for Standardization
ICAO	International Civil Aviation Organization
MOS	Manual of Standards
PED	portable electronic device
PIC	pilot in command
PRM	passenger with reduced mobility
TCCA	Transport Canada Civil Aviation

1.2 Definitions

Terms that have specific meaning within this AC are defined in the table below. Where definitions from the civil aviation legislation have been reproduced for ease of reference, these are identified by 'grey shading'. Should there be a discrepancy between a definition given in this AC and the civil aviation legislation, the definition in the legislation prevails.

Table 3: Definitions

Term	Definition
able-bodied passenger	Passengers who are clearly physically able and willing to assist crew in emergency situations.
adult	means a person who has turned 13.
air crew member	means a crew member for a flight of an aircraft (other than a flight crew member) who carries out a function during the flight relating to the safety of the operation of the aircraft, or the safety of the use of the aircraft.
cabin crew member	means a crew member who performs, in the interests of the safety of an aircraft's passengers, duties assigned by the operator or the pilot in command of the aircraft, but is not a flight crew member.
child	means a person who has turned two years of age but has not turned 13.
child restraint system	Any device, other than a seatbelt, that is designed specifically to protect and restrain an infant or child during all phases of flight. It typically has an internal harness and belt combination. The device needs to interface with the aircraft seat. This includes devices that are secured using the aircraft seatbelt, as well as systems that secure the device to the aircraft seat.
crew member	A person is a crew member of an aircraft if the person is carried on the aircraft and is: a. a person: i who is authorised by the operator of the aircraft to carry out a specified function during flight time relating to the operation, maintenance, use or safety of the aircraft, the safety of the aircraft's passengers or the care or security of any cargo which may affect the safety of the aircraft or its occupants, and ii who has been trained to carry out that function, or b. a person who is on board the aircraft for the purpose of: i giving or receiving instruction in a function mentioned in subparagraph (a)(i), or ii being tested for a qualification associated with a function mentioned in subparagraph (a)(i), or c. a person authorised by CASA under these Regulations, or by the operator, to carry out an audit, check, examination, inspection or test of a person mentioned in paragraph (a) or (b).
critical phases of flight	The period of high workload on the flight deck, normally being the periods between the beginning of taxiing until the aircraft is on the route climb phase and between the final part of descent to aircraft parking[1].

[1] Additional guidance on crew activities during specific phases of flight and the "sterile cockpit or flight compartment" rule is contained in Part 121, 133 and 135 AMC/GM documents under regulations 121.140, 133.110 and 135.120.

Term	Definition
deportee	A person in respect of whom a deportation order is in force.2
emergency exit	Door, window, or any other type of exit (e.g. tail cone exit) used as an egress point to allow maximum opportunity for cabin evacuation within an appropriate time period.
emergency exit row seating	Each seat in a row of seats located at an emergency exit, having direct access to the exit.
escort	An individual accompanying a passenger who requires special conditions, assistance or equipment when travelling by air.
flight crew member	A crew member who is a pilot or flight engineer assigned to carry out duties essential to the operation of an aircraft during flight time.
flight	means: a. in the case of a heavier-than-air aircraft, the operation of the aircraft from the moment at which the aircraft first moves under its own power for the purposes of taking-off until the moment at which it comes to rest after being airborne, and b. in the case of a lighter-than-air aircraft, the operation of the aircraft from the moment when it becomes detached from the surface of the earth or from a fixed object on the surface of the earth until the moment when it becomes again attached to the surface of the earth or a fixed object on the surface of the earth.
inadmissible passenger	A person who is or will be refused admission to a State by its authorities.
infant	means a person who has not turned two years of age.
operator	An operator of an aircraft means: a. if the operation of the aircraft is authorised by an AOC, a Part 141 certificate or an aerial work certificate—the holder of the AOC or certificate, or b. otherwise—the person, organisation or enterprise engaged in aircraft operations involving the aircraft.
passenger	In relation to an aircraft, means a person: a. who: i intends to travel on a particular flight on the aircraft, or ii is on board the aircraft for a flight, or iii has disembarked from the aircraft following a flight, and b. who is not a crew member of the aircraft for the flight.
passenger with reduced mobility	means a person who is likely to require special conditions and assistance to find and use an exit on board an aircraft in and emergency because: a. the person's mobility is impaired, or b. the person has another impairment.
pilot in command	In relation to a flight of an aircraft, means the pilot designated by the operator of the aircraft as being in command and charged with the safe conduct of the flight.

[2] Migration Act 1958.

Term	Definition
prepared emergency landing	A situation where the crew have prior warning or knowledge of an issue that may threaten the rest of the flight, e.g. engine fire, and time is available to prepare the cabin and passengers for an emergency landing.
removee	An unlawful non-citizen removed, or to be removed, under Division 8 of Part 2 of the *Migration Act 1958*.[3]
restraint	A device designed to safely restrain an occupant in their seat to prevent injuries resulting from inertial forces or other in-flight forces such as turbulence. A restraint may be a seatbelt, safety harness or approved child restraint system.
restricted person	means: a. a deportee (within the meaning of subsection 5(1) of the *Migration Act 1958*), or b. a removee (within the meaning of subsection 5(1) of the *Migration Act 1958*), or c. a person in custody, or d. a passenger carried on an aircraft: i who is on the aircraft because the passenger has been refused entry to a country, or ii whose passport does not include a visa required for entry to the passenger's destination country.
rotorcraft	means: a. a helicopter, or b. a gyroplane, or c. a powered-lift aircraft.
safety harness	A webbing-based restraint consisting of at least three anchor points restraining both the pelvis and upper torso.
seaplane	A seaplane includes an aeroplane with a floating hull.
seatbelt	A webbing-based restraint consisting of two anchor points restraining the pelvis. It is also referred to as a lap belt.
shoulder harness	Any device that is used to restrain the upper torso of a person and that consists of a single diagonal upper torso strap or dual upper torso straps.
special categories of passenger	Persons who need special conditions, assistance or equipment when travelling by air. These may include, but are not limited to: a. infants b. unaccompanied children c. persons with disabilities d. passengers with reduced mobility e. persons on stretchers f. restricted persons.
suitable person	A person is a suitable person to occupy an emergency exit row seat or a seat adjacent to an emergency exit if the person: a. is reasonably fit, strong, and able to assist with the rapid evacuation of

[3] *Migration Act 1958*.

Term	Definition
	the aircraft in an emergency, and b. would not, because of a condition or disability, including an inability to understand oral instructions, hinder: i other passengers during an evacuation of the aircraft in an emergency, or ii the aircraft's crew in carrying out their duties in an emergency.
type	For an aircraft, aircraft engine or propeller, means a design and make of aircraft, aircraft engine or propeller and, where appropriate, refers to a group of essentially similar aircraft, aircraft engines or propellers which, although possibly existing in different models, stem from a common basic design.
unstaffed exit	Emergency exit for which no cabin crew member has been positioned for the flight.

1.3 References

Legislation

Legislation is available on the Federal Register of Legislation website https://www.legislation.gov.au/

Table 4: Legislation references

Document	Title
Division 91.D.6 of CASR	Fuel requirements
Division 91.D.7 of CASR	Safety of persons on aircraft and cargo requirements
Division 20.3 of the Part 91 MOS	Safety briefings and instructions
Division 121.D.6 of CASR	Fuel requirements
Division 121.D.7 of CASR	Passenger transport and medical transport
Chapter 8 of the Part 121 MOS	Safety briefings and instructions
Division 138. D.7 of CASR	Carriage of passengers or cargo
Chapter 15 of the Part 138 MOS	Rules for external load operations
Division 135.D.6 of CASR	Fuel requirements
Division 135.D.7 of CASR	Passenger transport and medical transport
Division 135.D.9 of CASR	Miscellaneous

Document	Title
Division 133.D.7 of CASR	Passenger transport and medical transport
Division 133.D.9 of CASR	Miscellaneous

International Civil Aviation Organization documents

International Civil Aviation Organization (ICAO) documents are available for purchase from http://store1.icao.int/

Many ICAO documents are also available for reading, but not purchase or downloading, from the ICAO eLibrary (https://elibrary.icao.int/home).

Table 5: ICAO references

Document	Title
ICAO Doc 10002	Cabin Crew Safety Training Manual (second edition)
ICAO Doc 10049	Manual on the Approval and Use of Child Restraint Systems (second edition)
ICAO Doc 10086	Manual on Information and Instructions for Passenger Safety (first edition)
ICAO Doc 10102	Guidance for safety operations involving aeroplane cargo compartments (first edition)

Advisory material

CASA's advisory materials are available at https://www.casa.gov.au/publications-and-resources/guidance-materials

Table 6: Advisory material references

Document	Title
AC 91-18	Restraint of infants and children
AC 121-09, AC 133-06 and AC 135-10	Carriage of special categories of passenger
CASA CSB 1	Seatbelt and harness serviceability
CASA CSB 2	Disorderly passengers
CASA CSB 18	Managing passenger comfort devices
CASA CSB 25	Emergency evacuation and occupant survivability

Other references

Table 7: Other references

Document	Title
ATSB AO-2023-001-SAN-001	Fitment of constant wear lifejackets with seatbelts in aircraft

Document	Title
CAA NZ AC 91-22	Aircraft Refuelling and Defueling – Fire Prevention and Safety Guidance Measures
FAA AC 121-24E	Passenger Safety Information Briefing and Briefing Cards
FAA/CAMI Report (DOT/FAA/AM-01/2)	Access-to-egress: A meta-analysis of the factors that control emergency evacuation through the transport airplane type III overwing exit
IATA	Cabin operations safety best practices guide, 10th edition
ISO 9186-1:2014	Graphical symbols — Test methods — Part 1: Method for testing comprehensibility
Symbol Development: Lithium-ion Battery and Thermal Runaway©	The Interaction Group Symbol Development: Lithium-ion Battery and Thermal Runaway Powerbank Research Report (22 May 2025)
TCCA AC 700-036	Brace for Impact Positions for all Aircraft Occupants

2 Introduction

2.1 The criticality of providing passengers with effective safety information

Key safety message

Uninformed passengers can degrade the safety effects established by aircraft crashworthiness certification standards and cabin crew evacuation procedures.

Conversely, well-informed and knowledgeable passengers contribute to survivability in an aircraft accident or incident.

2.1.1 There are multiple factors that affect survivability.

2.1.2 Physical factors include:

- adopting the correct brace position for impact
- the correct use of seatbelts
- the location and operation of all emergency exits.

2.1.3 Information factors include:

- passenger safety briefing cards and videos (provided the videos are focused on the primary goal of passengers retaining key safety content)
- other signs and placards
- emergency lighting and marking systems
- verbal briefings by crew members.

2.1.4 Accident investigations have shown that survival rates are improved when passengers are provided with accurate and effective information about the:

- correct use of equipment such as seatbelts
- actions they should take in a life-threatening situation such as:
  - **how to adopt the brace position**
  - **leaving cabin baggage on the aircraft** when instructed to evacuate
  - **evacuating an aircraft without delay** when instructed
  - evacuating in an **orderly, correct and constructive manner**.

2.1.5 This potentially lifesaving information is relayed to passengers via a variety of means, including briefings by crew, videos, passenger safety briefing cards, ordinance signs, placards, and emergency lighting systems.

2.1.6 For air transport operations, passenger information systems must include[4], as a minimum:

- oral or audio-visual briefings

[4] CASR 133.235, 133.240, 135.275, 135.280, 121.280, 121.285.

- pictorial and other visual safety information e.g. safety briefing cards.

Note: CASR 91.565 does NOT specify how the passenger safety briefings and instructions must be provided to passengers.

2.1.7 Operators and pilots should consider passenger safety information system delivery methods, taking into account passenger behaviour and strategies to mitigate distractions during safety briefings.

2.1.8 Every passenger should be motivated to focus on the safety information in the required passenger safety briefing.

2.1.9 Although there are studies that support the use of engaging content within safety videos, studies also show the importance of providing critical safety information related to the cabin environment in the correct context. The use of engagement communication techniques needs to remain focused on enhancing the retention of critical safety information. Engagement techniques cannot override the necessity for effective delivery of critical safety information that ensures passengers are communicated the information they need to survive emergency situations.

2.1.10 Safety briefing information should be presented in a form that can be understood by all passengers, with consideration given to passengers whose first language is not English. Translated verbal and written briefings and pictograms are useful tools to assist passengers.

2.1.11 Operators and pilots are strongly recommended to assess the effectiveness of their chosen communication methods to ensure that they will achieve the critical safety outcomes during an emergency.

2.1.12 Further, it is recommended that operators have a system to evaluate passenger comprehension of the safety information throughout the development process of the safety briefings and briefing cards. Post implementation reviews will help to validate passenger comprehension and mitigate the distractions caused by portable electronic devices (PEDs) often used by passengers during safety briefings.

2.2 Regulatory requirements

Table 8: Regulatory references for different categories of operations

Regulatory References	91	138	133	135	121
Safety directions by pilot in command					
CASR 91.570	X	X	X	X	X
Passenger Safety Briefings and Instructions					
CASR 91.565 Part 91 MOS, Chapter 20	X	X			
Safety briefings, instructions and demonstrations					
CASR 121.285 Part 121 MOS, Chapter 8, Division 2					X
CASR 133.240 Part 133 MOS, Chapter 7			X		

Regulatory References	91	138	133	135	121
CASR 135.280 Part 135 MOS, Chapter 9				X	
Safety briefing cards					
CASR 121.280 Part 121 MOS, Chapter 8, Division 1					X
CASR 133.235 Part 133 MOS, Chapter 7			X		
CASR 135.275 Part 135 MOS, Chapter 9				X	
Briefing in the event of an emergency					
CASR 121.295					X
CASR 133.245			X		
CASR 135.285				X	
Safety briefing for passengers in emergency exit rows					
CASR 121.290					X
Fuelling safety procedures					
CASR 121.240					X
CASR 133.195			X		
CASR 135.220				X	
CASR 138.302		X			

3 Safety briefing cards

3.1 General

3.1.1 Safety briefing cards form an integral part of the delivery of safety information to passengers and, when followed correctly, can significantly improve a passenger's chances of survival following an emergency.

3.1.2 It is important to note, however, that safety information cards alone do not provide an acceptable means of delivering the safety information. The information relayed on the card is meant to supplement that provided to passengers during the safety briefings, instructions and demonstrations – not replace it.

3.2 Design, layout and location

3.2.1 The design, layout and location of the safety briefing card should promote quick comprehension of its content in a self-explanatory manner and allow passengers to easily see and retrieve it. Information on the safety briefing card should be clear and presented in an understandable manner.

3.2.2 It is recommended that the operator have a process to evaluate the content of its passenger safety briefing card and verify passenger comprehension of the information provided. The process should also be applied whenever subsequent modifications or changes are made.

3.2.3 Pictograms are symbols representing a concept, object, activity, place or event by illustration. They are characterised by their simplified style, which omits details that are unnecessary to the desired communication and are the recommended media type for safety briefing cards in lieu of text.

3.2.4 The use of pictograms on safety briefing cards resolves the issue of passengers not being able to read or understand the language of text used, which would result in them missing out on information that may be critical for the safety of flight or to prevent personal injury.

3.2.5 If text is necessary on the passenger safety briefing card, it is recommended that it be in the operator's official language(s), in English and in any other language(s) the operator deems necessary.

3.2.6 When designing the safety briefing card, it is recommended that consideration be given to the following in relation to the use of pictograms and text:

- systems, equipment and the actions required to operate them are depicted pictorially or diagrammatically
- procedures requiring several steps are presented in correct sequence with the sequence clearly identified (e.g. numbered steps)
- anytime a specific crew member is reflected on the card or sequence, the figure in the pictogram clearly reflects a uniformed crew member
- to ensure consistency and to minimise confusion for passengers, the information provided on the passenger safety briefing card is consistent with the instructions on the passenger ordinance signs, markings and placards installed in the cabin i.e. pictograms are the same across all of these
- use of international symbols
- all depictions are simple and easy to understand
- steps are taken to verify that any symbols used in a passenger information card are easily recognised and understood by naïve test subjects

- safety briefing cards are tested for comprehension in accordance with recognised standards including, but not limited to:
  - ISO 9186 – Graphical symbols – test methods and contemporaneous research
  - Symbol Development: Lithium-ion Battery and Thermal Runaway©
- refer to Appendix B of this AC for further details.

3.2.7 Other design considerations include:

- the design and location of the safety briefing card enables the seated passenger to see and have access to the card when it is placed in its normal location aboard the aircraft i.e. it is large enough to compete with magazines for attention and passengers can visually locate it
- having an eye-catching title or symbol that identifies it as safety or emergency instructions
- the design makes it easy to identify the aircraft type. For example, large font on the top quarter of the cover page that identifies the aircraft make, model and series with the emphasis on aircraft information versus the operator's name or logo
- if the operator has multiple aircraft makes, models and series in its fleet, colour coding the cards to ensure the aircraft are restocked with the corresponding card depicting relevant, accurate safety information
- safety briefing cards that are interesting, attractive and uncluttered so passengers want to read them. A multi-coloured card that has pictures and drawings will more likely be picked up and read more quickly than a black and white printed card or a card that contains too much text.

3.2.8 The passenger safety briefing card must only contain safety-related information[5] e.g. no advertising or promotional items are to be included.

3.2.9 Operators may consider providing specific safety briefing cards for special categories of passengers, such as persons with disabilities (e.g. braille or large character cards) and passengers seated in emergency exits rows (e.g. cards containing a summary of the exit briefing information).

3.2.10 It is recommended that operators have a process to verify that the correct cards are on board and to remove and replace damaged cards from the aircraft.

3.3 Accuracy and consistency of information

3.3.1 Differences in style and technical content between two forms of information can be confusing and unintentionally provide conflicting information.

3.3.2 To minimise confusion for passengers, it is important that the information provided on the safety briefing card accurately reflects the aircraft being operated and is consistent with other safety information available.

3.3.3 The following considerations are relevant in this regard:

- where there are differences between aircraft of the same type / model / series, e.g. the equipment carried on board or the equipment type is different, the safety cards used are to be specific to the aircraft, unless the aircraft seating configuration and cabin size is such that any passenger (excluding infants and children for whom another passenger is directly responsible) can easily identify, in an emergency situation where they may be confused and experiencing a loss of situational awareness, the location of equipment that could be reasonably expected to be used by the passenger.

[5] CASR 133.235(4)(b), 135.275(4)(b), 121.280(3)(b).

> **Note:** In accordance with the MOS requirements relating to the passenger safety briefing, the briefing must include the location of relevant equipment for the specific aircraft being used.

- information contained in the card is consistent with information given in the safety briefings, the operator's procedures, and other information displayed in the aircraft, e.g. emergency exit markings and operating instructions that must be displayed[6].

3.3.4 It is essential that passengers seated adjacent to emergency exits be readily able to determine the correct method of opening and disposing of (where applicable) those exits in an emergency. It is recommended that the instructions for opening the exits, including cabin window emergency exits (Figure 1 below) considers the ergonomics of the exit design e.g. if the exit is to be operated from the seated position, this should be depicted on the safety briefing card.

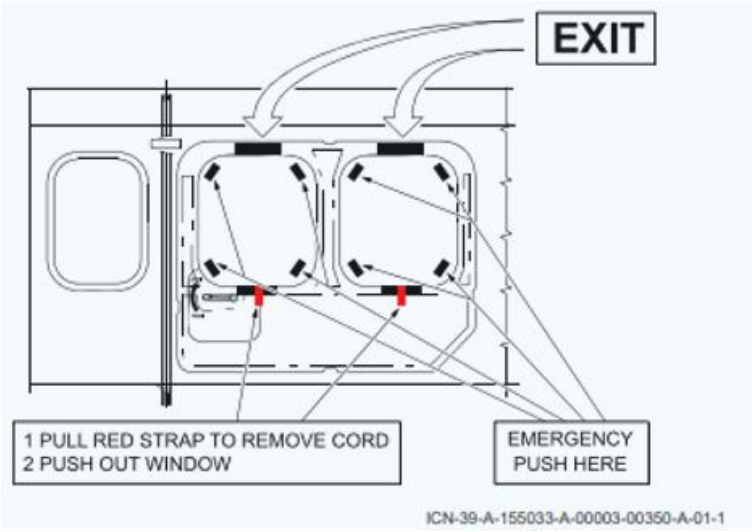

Figure 1: Example window emergency opening instructions

3.4 Content of safety briefing cards

3.4.1 It is important the safety briefing card contain instructions specific to the make, model and series of aircraft on which it is used, including the systems and equipment installed and the procedures relevant to those systems and equipment.

3.4.2 The minimum information that must be represented on the safety briefing card for air transport operations[7] is contained in the respective MOS[8] for Parts 121, 133 and 135 of CASR.

3.4.3 The following information in this section provides further guidance and additional content for consideration by the operator when producing safety briefing cards relevant to their operation.

3.4.4 Refer section 7.3 for specific and additional considerations for rotorcraft operations.

3.4.5 **Cabin secure aspects:**

- correct stowage of carry-on baggage and when it is required to be stowed

[6] CASR 90.220

[7] CASR 133.235(4)(a), 135.275(4), 121.280(3)(a)

[8] Part 133 MOS, Chapter 7; Part 135 MOS, Chapter 9; Part 121 MOS, Chapter 8

- caution when opening overhead lockers
- required position of adjustable seats, attachments (e.g. tray tables, footrests, IFE, bassinets) and window shades for movement on the surface, take-off and landing.

3.4.6 **Portable electronic devices (PEDs):**

- use and stowage of PEDs (e.g. permissible times, conditions and limitations of use).

3.4.7 **Smoking:**

- smoking restrictions including the use of electronic smoking devices.

3.4.8 **Use of seatbelts and other restraints:**

- when and how to fasten, adjust and release seatbelts and / or shoulder harnesses, and infant restraints
- information on the use of a child restraint system (CRS).

Note: Refer to AC 91-18 - Restraints of infants and children for recommendations on restraint of infants and children.

3.4.9 **Brace position:**

- appropriate method based on the seat type, spacing and orientation (i.e. forward, aft and side facing passenger seats)
- alternative brace positions (e.g. for expectant mothers, infants, children, tall or large individuals).

Note: Refer to Appendix A for more information on brace positions.

3.4.10 **Location and use of oxygen masks:**

- location of masks
- activating the flow of oxygen
- donning and securing the mask
- the requirement for a passenger to don and secure their own mask before assisting another passenger, such as children, with their mask.

3.4.11 **Location and use of life jackets or individual flotation devices:**

- location of life jackets
- how to remove life jackets from stowage and packaging
- method of donning and inflation, when to inflate life jackets, and the signalling equipment they contain
- use in the water and the manual operation of survivor locator lights and accessories, as appropriate.

3.4.12 **Life rafts:**

- location and removal from stowage
- how to launch the life raft
- how to board the life raft, including with infants and children

- the method of detaching from the aircraft.

3.4.13 **Emergency exits and the means for assisting evacuation:**

- location of exits
- checking for hazards before opening the exit (i.e. fire, water, debris)
- method of operation, including handle rotation direction, manual inflation of slide, alternate operation in case of ditching, and what to do with the exit hatch if removable
- use of window style emergency exits
- use of the means for assisting evacuation (e.g. escape ropes, evacuation slides), including with infants and children
- method of egress through exits without means for assisting evacuation
- unusable exit(s) and alternative egress routes in case of unusable exit(s)
- leaving carry-on baggage behind
- removal of high-heeled shoes in an evacuation
- awareness of propellers, main and tail rotors as applicable.

3.4.14 **Escape paths and evacuation routes:**

- depiction of routes to the exits inside the aircraft
- emergency lighting system (the form, function, colour and location of the emergency escape path markings)
- movement on a multi-level aircraft
- movement via the wing to the ground or water
- movement on the ground or water away from the aircraft.

3.4.15 **Flights where cabin crew are not required:**

- location of first aid kits
- location of fire extinguishers that are accessible to passengers
- location of emergency locator transmitter(s) if removable from the aircraft
- location of survival equipment and, if the stowage compartment is locked, the means of access or location of the key.

4 Safety briefings, instructions and demonstrations

4.1 Delivery methods

4.1.1 Accident investigations recognise that passengers tend to be inattentive to safety briefings.

4.1.2 When determining the most effective way of providing safety information to passengers, operators are recommended to employ approaches that not only encourage passenger attention but also **improve comprehension and retention** of the information and instructions.

4.1.3 Safety information can be delivered to passengers using a variety of means, including:

- orally
- audio presentation
- audio-visual presentation
- a crew member
- a combination of the methods mentioned.

4.1.4 The principles of learning (i.e. participation, repetition, relevance, transference, feedback) support passenger safety information delivery being conducted through a variety of methods to improve understanding and retention.

4.1.5 The phrasing of the message is significant. The perceived importance of safety briefings is substantially lessened when introduced with a statement stressing regulatory obligation for compliance rather than safety accountability e.g. “Regulations require…” is not a preferred message.

4.1.6 An apparent lack of endorsement by the operator and a lessening of individual crew member responsibility will often have a contradictory or negative impact on the information provided to the passengers. Passengers want the responsibility for their safety to be a shared concern, involving the operator, the crew, the passenger and the regulator.

4.1.7 Briefings are also an educational opportunity. It is therefore recommended that announcements focus on safety accountability to enhance passenger awareness and participation in their own safety e.g. “For your safety…”, “As your safety is important to us…”

4.1.8 When developing procedures for the delivery of safety briefings to passengers, it is recommended that consideration be given to:

- the nature of the operation and tailoring the safety briefings accordingly e.g. content and delivery methods if no cabin crew are carried
- using terminology and directions that emphasise the importance of:
  - listening to and observing safety briefings and announcements
  - being aware of the location of safety equipment, and
  - the passengers' active participation in safety
- presenting the information in a clear and unambiguous manner and in a form easily understandable to passengers
- communicating information to passengers in English and any additional languages that are necessary for the operations being conducted to ensure coverage of the largest percentage of possible passengers on board (e.g. language(s) of the State of departure and destination) and carrying language-qualified crew members on specific routes

- providing guidance for crew that includes a checklist or standard briefing format to ensure consistency in delivery
- ensuring crew are not assigned to, nor perform, non-safety-related duties during the safety briefings.

4.2 Audio-visual safety briefings

4.2.1 The advantage of pre-recorded audio-visual presentations is the assurance that a complete briefing is given, that the diction is clear, and that the overall high quality of the safety briefing is maintained.

4.2.2 Pre-recorded presentations also lend themselves well to a multilingual presentation. Presentations can include closed captioning for the those who are hearing impaired and other visual presentations, which may be more meaningful to passengers.

4.2.3 However, safety briefings **must only contain information that is essential for safety**[9]. For example, paid advertising, schedules or promotional information is not safety-related and should not be co-mingled with or inserted into the safety briefing.

4.2.4 When developing audio-visual safety briefings, it is recommended that operators consider:

- crew procedures including a verification that the delivery system (e.g. IFE system) is functional for all passengers before starting the presentation
- alternative methods of conducting the safety briefing if the audio-visual presentation equipment becomes inoperative
- ensuring the safety footage is structured at a pace that allows a continuous ability to follow the information presented
- including sign language or subtitles to simultaneously complement the presentation
- having cabin crew evenly distributed throughout the cabin during the presentation and attentive to passengers
- having crew conduct a walk-through to ensure compliance with the requirements of the safety briefing and answer any passenger questions or concerns.

4.2.5 To ensure there is no impediment to rapid passenger egress in an emergency, screens or monitors that extend into aisles or obstruct emergency exits[10] must be stowed prior to the aircraft taxiing, taking off, and landing.

4.3 Crew member demonstrations

4.3.1 Live safety demonstrations delivered by a well-trained crew member allow for higher engagement with passengers. Additionally, a crew member can tailor the demonstration where possible to the audience. For example, the crew member might repeat some information, or regain the attention of a distracted passenger.

4.3.2 The importance of ensuring passengers clearly understand essential safety information cannot be overstated; therefore it is important that crew encourage passenger attention throughout the safety briefing.

4.3.3 To ensure each passenger can clearly hear, easily see, and are able to pay attention to the safety demonstration:

[9] CASR 133.240(3)(b), 135.280(3)(b), 121.285(2)(b)

[10] CASR 133.375, 135.260, 121.375, 121.260

- any curtains or dividers will need to be opened to provide passengers with an unobstructed view
- if aircraft noise will impact on the briefing, it may need to be conducted prior to engine start-up
- careful consideration must be given to the sequencing of any simultaneous live demonstration and audio-visual presentation as passengers may find it difficult to absorb both sets of content simultaneously.

4.3.4 When developing safety briefings involving crew demonstrations, it is recommended that consideration also be given to:

- eliminating distractions for crew and passengers during the briefing
- ensuring that crew conduct the demonstration in a professional and interested manner
- where more than one cabin crew member is involved, distributing them throughout the passenger cabin at designated positions
- if the cabin crew complement does not allow for crew members to be present or visible in each cabin compartment for the safety demonstration, repeating the safety demonstration to ensure passengers seated in all cabin compartments have been briefed
- coordinating demonstration gestures with the applicable information given in the oral safety briefing
- if the oral safety briefing is conducted by a crew member, delivering the briefing slowly and distinctly, in an animated fashion, and making eye contact with as many passengers as possible
- ensuring each aircraft is equipped with the necessary number of safety demonstration kits, each containing all the equipment and documentation needed to conduct the safety demonstration
- conducting checks of the safety demonstration equipment to ensure it is readily available and serviceable
- appropriately placing safety demonstration equipment during the safety demonstration to avoid any impediment to egress from the aircraft, e.g. not placing safety demonstration equipment on the floor in the aisle(s)
- crew conducting a walk-through to ensure compliance with the requirements of the safety demonstration and answer any passenger questions or concerns.

5 Briefing guidance for special purposes

5.1 Briefings for passengers with reduced mobility (PRM) and other special categories of passengers

5.1.1 Some passengers may require dedicated briefings that are adapted to their needs and circumstances. These passengers include, but are not limited to:

- passengers with reduced mobility
- persons travelling with infants and children
- persons travelling with medical patients on medical transport operations
- unaccompanied children
- persons with disabilities
- persons on stretchers
- inadmissible passengers, deportees or persons in custody.

5.1.2 In general terms, a dedicated safety briefing for PRM and other special categories of passengers should include the information contained in the required safety briefing and safety card that the passenger may not be able to receive otherwise (e.g. if the passenger is visually impaired), and any additional information specific to the needs of the passenger and their safety.

Note: For air transport operations, crew are also required to ask PRM and any person accompanying or assisting the passenger about the best way of assisting them in an evacuation[11].

5.1.3 Dedicated safety briefings may be provided verbally and / or visually according to the needs of the passenger and their ability to understand. For example, visually-impaired passengers may be briefed verbally, with braille brochures provided as a back-up. Hearing-impaired passengers may be able to lip-read and, where safety briefings are conducted by video media, closed captioning could be made available. In some circumstances, it may be necessary to provide the briefing to the person accompanying the passenger.

5.1.4 When developing dedicated safety briefings for PRM and other special categories of passengers, it is recommended that consideration also be given to the following:

- pre-boarding PRM and other special categories of passengers (and their escort if they are accompanied) to accommodate the dedicated pre-departure briefing
- when the passenger requiring the briefing can understand the content, the dedicated safety briefing is given to the passenger and not just to the escort
- the crew member providing the briefing is one of the crew designated to assist the passenger in an emergency evacuation

[11] CASR 133.240(4), 135.280(4), 121.285(3)

- informing the passenger that the crew member(s) will assist in an emergency evacuation as soon as they are able
- where the passenger requires assistance to reach an emergency exit and they are accompanied by an escort, advising the escort to help the passenger to evacuate and confirming that the crew member(s) will assist as soon as they are able
- including cabin layout and any relevant specialised equipment supplied by the operator on board
- providing information about the relevant features of an aircraft, such as the use of headsets and intercom, and the location of the call button and toilets.

5.1.5 Section 6.4 below provides guidance on briefing content for PRM and other special categories of passengers.

5.2 Safety briefing for passengers in emergency exit rows

5.2.1 Passengers in emergency exit rows who receive a dedicated briefing perform better during actual evacuations are better prepared to operate exits and are more likely to read the safety information card.

5.2.2 Dedicated briefings also remind passengers of their exit seat responsibilities, encourage them to review all safety information, and provide an opportunity to ask questions about the exit operation and procedures.

5.2.3 Benefits to the crew includes being better able to ascertain whether passengers occupying exit row seats can understand crew commands and perform the function if required.

5.2.4 When developing dedicated safety briefings for passengers seated in emergency exit rows, it is recommended that consideration be given to:

- ensuring the briefing is conducted in a language that reflects the operator's emergency procedures and is understood by all passengers occupying the exit row
- including any unique characteristics of the exit included in the operating instructions on placards and safety cards e.g. Boeing 737-800 over-wing exits are hinged at the top and open outward, Airbus A320 over-wing exits house escape slide manual inflation handles in the upper inner corners of the exit frame.

5.2.5 Section 6.4 below provides guidance on briefing content for passengers seated in emergency exit rows.

5.2.6 In many rotorcraft, each seat row may also be an emergency exit row. The seating of passengers associated with each emergency exit needs to be considered in the operator's procedures and safety briefing instructions.

5.3 Safety briefing in the event of an emergency

5.3.1 Alert, well-informed passengers have a better chance of surviving any injury or life-threatening situation that may occur on board an aircraft.

5.3.2 The purpose of providing passengers with information and instructions during abnormal and emergency situations is to enhance their reaction and survivability in the event of an accident.

5.3.3 Section 6.12 below provides guidance on briefing content for a prepared emergency landing. It is recommended that operators also develop standard information and instructions to passengers for other abnormal and emergency situations, such as:

- fire, smoke and / or fumes

- cabin pressurisation problems and decompression
- crew incapacitation
- forced landing and land as soon as possible emergency situations
- rapid disembarkation.

5.4 Seat belts or harnesses and wearing lifejackets

5.4.1 To be effective in an accident, seatbelts must be fitted correctly. Not wearing a seatbelt or wearing it improperly can result in serious injury or fatalities. For example, the fatality rate in accidents in Canada involving seaplanes has been shown to be 3 to 4 times higher for occupants who don't wear a restraint system properly over those that do.[12]

5.4.2 For seatbelts to be effective, it is advised that[13]:

- seatbelts must not be twisted, they must be fitted without slack, and adjusted to fit as tightly as comfort allows
- the lap portion of the seatbelt must be placed low and tight across the hips
- seatbelts must not be fitted across the abdomen as this can cause internal injuries or result in the person sliding out the bottom of the harness (submarining), nor should they be fitted across the thighs, or the seatbelt will not effectively prevent forward movement.

5.4.3 For the fitment of 4-point restraints, the lap belt portion of the restraint should be fitted and adjusted first before the shoulder harness. This is to prevent the shoulder harness from pulling the lap belt off the hips. Refer to Figure 2 for the correct positioning of a 4-point restraint.

[12] MacDonald C, Brooks C, McGowan R. Survival from Canadian seaplane water accidents: 1995 to 2019. Aerospace Medicine and Human Performance. (2021)

[13] See Airbus Helicopters Safety Information Notice (SIN) 3444-S-25 Correct use of restraints to minimise the risk of injury, FAA AC 91-65 Use of shoulder harnesses in passenger seats, FAA Seatbelts and shoulder harnesses – smart protection in small aircraft (2020), Transport Canada AC 605-004 (3) Use of safety belts and shoulder harnesses on board aircraft, and Transport Canada AC 700 036 (1) Brace for impact positions for all aircraft occupants.

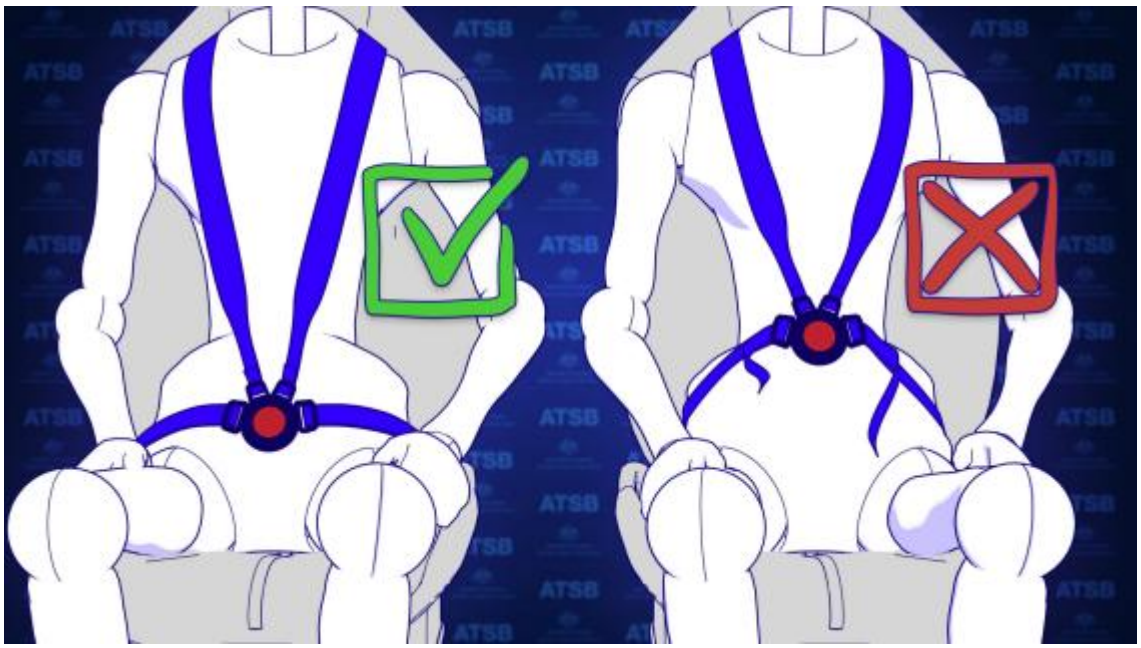

Figure 2: Correct positioning of a 4-point restraint

Source: AO-2023-001-SAN-001 Fitment of constant wear lifejackets with seatbelts.

5.4.4 Aviation lifejackets are inflatable and can be packaged in many forms. To ensure passengers have access to a lifejacket in a time limited situation, lifejacket manufacturers have produced lifejackets known as constant wear lifejackets. Constant wear lifejackets come in two packaging forms. There is a yoke style which is worn like a vest (Figure 3, right) and a pouch style which is worn around the waist (Figure 3, left) but is readily pulled over the head of the occupant when required.

Figure 3: Example of pouch (left) and yoke (right) style constant wear lifejackets

Source:AO-2023-001-SAN-001 Fitment of constant wear lifejackets with seatbelts.

5.4.5 Accident investigations[14] have identified that the incorrect fitment of seatbelts with constant wear pouch style lifejackets is prevalent, particularly in helicopter operations. Figure 4 contains some examples of **incorrect** fitment. Safety issues associated with incorrect fitment include:

- If the seatbelt buckle is positioned above the lifejacket pouch or over it, then the lap belt portion of the seatbelt is not low and tight across the passenger's hips and the seatbelt buckle becomes positioned either over the lifejacket (creating slack) or above the lifejacket, which is close to the passenger's sternum thereby increasing the risk of injury.

5.4.6 Although interference is most prevalent from a 'pouch style' constant wear lifejacket, the 'yoke style' constant wear lifejacket more often used by pilots and commercial passengers has also been shown to have the potential to interfere with the aircraft seatbelt.

Figure 4: Examples of incorrect lifejacket fitment and interference with the seat restraint

Source: AO-2023-001-SAN-001 Fitment of constant wear lifejackets with seatbelts.

[14] For example, ATSB AO-2023-001.

5.4.7 Operators and pilots are strongly recommended to contact the manufacturers of constant wear lifejackets to obtain specific operating instructions and/or guidance material about how to wear and use a constant wear lifejacket with a seatbelt (of any configuration) such that it does not interfere with the performance of the seatbelt during an accident.

6 Safety briefing content and timing

6.1 General

6.1.1 The minimum information that must be included in passenger safety briefings and when those briefings must be conducted[15] is contained in the respective MOS[16] for Parts 91, 121, 133, and 135 of CASR.

6.1.2 The information in this section provides further guidance and additional content for operators to consider when developing safety briefings, instructions and demonstrations relevant to their operations.

6.2 Pre-departure briefing

6.2.1 Prior to departure from the gate or parking stand, operators and pilots are recommended to consider briefing passengers on the following matters:

- carry-on baggage:
  - information on the operator's baggage allowance, designated stowage locations and special instructions, e.g. place heavier items under the seat instead of in the overhead bin, any restrictions on the stowage of carry-on baggage in emergency exit rows
- PEDs and batteries:
  - permitted devices, use and stowage at different phases of flight including during the safety demonstration, danger of fire from a damaged device, the need to call for immediate assistance in case a device is damaged, hot, produces smoke, is lost, or falls into the seat structure (including advice to refrain from manipulating the seat), the need to monitor devices during charging
- emergency exit rows:
  - refer to section 6.3 below
- dedicated briefings:
  - refer to section 6.4 below.

6.3 Emergency exit rows

> **Note:** Also read Section 5.2 of this AC.

6.3.1 When determining what to include in a briefing to a passenger seated in an emergency exit row[17] in relation to what to do if it became necessary to use the exit, it is an acceptable means of compliance if the briefing includes the following matters:

- passenger's role:
  - the importance of the role of the passenger in the event of an emergency and the responsibility to operate the exit

[15] CASR 133.235(4)(a), 135.275(4), 121.280(3)(a)

[16] Part 91 MOS, Division 20.3; Part 133 MOS, Chapter 7; Part 135 MOS, Chapter 9; Part 121 MOS, Chapter 8

[17] CASR 121.290

- acceptance:
  - a request for the passenger to verbally accept the responsibility and confirm ability to operate the exit
- evacuation signal:
  - the signal or command that would instruct the passengers to open exits; to prevent an uncommanded opening, emphasising the need to follow all instructions and listen closely to crew commands
- exit operation:
  - check for hazards before opening the exit e.g. fire, high water levels, debris; how to open the exit; what to do with the exit if removable
- evacuation assist means:
  - where exits are equipped with equipment to assist in evacuating e.g. lifeline, escape rope, slide, the location and use of that equipment
- egress:
  - method of egress through exits, possibility of inversion in helicopter water landings, movement from the aircraft to the ground e.g. sit and slide down wing flaps, movement away from the aircraft
- visual instructions:
  - location of placards and the safety briefing card to be reviewed.

6.4 PRM and other special categories of passengers

Note: Also read Section 5.1 of this AC.

6.4.1 When developing safety briefings for PRM and special categories of passengers to facilitate the application of procedures in an emergency[18], it is recommended that operators and pilots consider what components of the general safety briefing need to be addressed in dedicated briefings specific to the needs of the passenger. For example:

- the use of seatbelts, other restraint devices and additional features
- means to restrain, secure or control assistance animals
- most suitable brace position for the passenger based on physical condition
- commands if bracing is necessary
- location of the nearest exit and nearest alternate exits
- emergency lighting (refer to paragraph 6.5.1 below)
- oxygen (refer to paragraph 6.5.1 below)
- floatation devices (refer to paragraph 6.5.1 below)
- assistance in the event of an emergency
- use of seat controls, headsets and intercom and the call button.

[18] Part 133 MOS, 7.02; Part 135 MOS, 9.02; Part 121 MOS, 8.03

6.4.2 Operators are also recommended to consider briefing PRM and special categories passengers on the following matters, as applicable:

- passenger with reduced mobility:
  - most appropriate exit(s) for the passenger
  - most appropriate route to the exit(s)
  - whether mobility aids will be usable or accessible in an emergency evacuation
  - query regarding assistance required in the event of an emergency and the most appropriate means of providing that assistance (this information should be conveyed to other crew members for their awareness.)
- visually-impaired passenger:
  - the number of rows of seats to the closest exit and the alternate exit
  - the features of those exits
  - tactile familiarisation with the equipment that the passenger may be required to use in the event of an emergency and if requested, the exits
  - where the passenger's mobility device (if any) is to be stowed and to leave it behind in an emergency evacuation
  - provide a copy of the Braille or large-print versions of the passenger safety briefing cards if carried by the operator.
- stretcher occupant and assistant:
  - evacuate when the cabin area surrounding the stretcher is clear
  - evacuate the stretcher occupant without the stretcher if possible
  - be seated when going down a slide, holding the stretcher occupant in front
  - in the event of a ditching, fit the life jacket on the stretcher occupant.
- unaccompanied child:
  - in the case of evacuation, seek the assistance of an adult passenger
  - if there is an adult passenger sitting next to the unaccompanied child, inform them to assist with an oxygen mask in a depressurisation if necessary, and to call a cabin crew member in all other in-flight situations.
- passenger responsible for infants or children:
  - use of the infant seatbelt, child restraint system (CRS) and seatbelt when securing two children in one seat, as applicable
  - that restraints should be adjusted without slack
  - that an infant / child cannot share a seatbelt with the accompanying responsible person
  - the requirement for the infant(s) / child(ren) to be secured by phases of flight, when the seat belt sign is illuminated or as instructed by crew
  - information on the use of bassinets, including when they are permitted
  - how to place and secure the oxygen masks on the infant(s) / child(ren)
  - provision of infant life jackets and additional life jacket for two children in one seat, as applicable
  - use of infant life jackets, including how to remove it from its packaging, donning, and when to inflate the jacket

  - in case of turbulence, the infant(s) / child(ren) need to be secured using the applicable restraint. If the infant(s) / child(ren) are not secured when turbulence is encountered, the accompanying responsible person is required to secure them
  - in the event of an anticipated emergency landing or ditching, the most appropriate brace position for the passenger nursing an infant. Where a CRS is being used, the need for the infant(s) / child(ren) to be secured in the CRS
  - in the event of an evacuation, the accompanying responsible person should remove the infant(s) / child(ren) from the infant seatbelt or CRS and leave the device behind.
- passenger responsible for a person other than an infant or child:
  - how to assist that person with donning and securing their oxygen mask
  - how to use that person's personal restraint system, if any, on board the aircraft
  - how to assist that person in an emergency.

6.5 AMC for safety briefing/demonstration

6.5.1 Prior to take-off, it is an acceptable means of compliance (AMC)[19] if operators and pilots brief passengers on the following matters:

> **Note:** If the legislation requires an additional item to be briefed / demonstrated then that item must be briefed / demonstrated in addition to the list below.

- use of seatbelts and when they must be worn, with an acceptable means of compliance (AMC) being if the briefing includes the following:
  - when seatbelts are required to be worn
  - use of seatbelts and / or shoulder harnesses, including fastening, tightening, unfastening and any other features e.g. airbag
  - that seatbelts should be worn low and all restraints, including harnesses, should be adjusted without slack
  - how to position and adjust a seatbelt or harness or other method of restraint such that it does not interfere with the proper functioning of a lifejacket if it is required to be worn by a person on the aircraft during the flight
  - the need to keep the seat belt fastened while seated throughout the flight to prevent injury in the event of unanticipated turbulence encounters.
- brace position:
  - how and when to adopt the brace position.
- cabin secure aspects:
  - when items are to be secured
  - required position of seatbacks and seat attachments e.g. tray tables, footrests, IFE
  - required position of cabin fixed attachments e.g. bassinets

[19] For non-air transport operations, see regulation 91.565 of CASR and paragraph 20.06(c) of the Part 91 MOS. For air transport operations, see regulation 121.285 of CASR and paragraph 8.03(8)(a) of the Part 121 MOS, regulation 133.240 of CASR and paragraph 7.02(9)(a) of the Part 133 MOS, and regulation 135.275 of CASR and paragraph 9.02(9)(a) of the Part 135 MOS.

  - required position of window blinds.
- carry-on baggage:
  - when carry-on baggage is required to be secured
  - correct stowage and any restrictions in emergency exit rows
  - the importance of leaving carry-on baggage behind in case of evacuation.
- emergency exits:
  - number and location of exits
  - reference that the nearest exit may be behind the passenger
  - that exits may be blocked and the need to identify an alternate exit.
- emergency lighting:
  - location of emergency escape path lighting
  - how to use the lighting as a guide to an emergency exit in the case of darkness or smoke
  - any visual features that designate the location of the emergency exit position
- supplemental oxygen:
  - location of oxygen dispensing equipment
  - obtaining a mask
  - activating the flow of oxygen
  - donning and securing the mask
  - reference to the need for a passenger to don and secure their mask before assisting another passenger
  - that oxygen will flow through the mask even though the reservoir bags may not inflate (if applicable).
- life jackets:
  - location including any different stowage locations e.g. under or between seats or in a side console
  - removal of life jackets from stowage areas and pouches
  - donning of life jacket including a demonstration
  - when and how to inflate the life jacket including manual / oral inflation methods
  - a warning that life jackets must not be inflated inside the aircraft.
- life rafts:
  - location.
- smoking:
  - smoking restrictions including the use of electronic smoking devices the presence of smoke detectors in the toilets and that tampering, destroying or disabling smoke detectors is prohibited.
- safety instructions:
  - required compliance with crew members' instructions, ordinance signs and placards.
- safety briefing card:
  - location and presentation of the safety briefing card

  - importance of its contents and the need for passengers to review it prior to take-off.
- portable electronic devices (PEDs) and batteries:
  - use and stowage of PEDs
  - related policies (refer to paragraph 6.2.1 above).
- special survival equipment:
  - where intended to be used by passengers, the location of the equipment and how to use it.

6.5.2 Where a safety demonstration is conducted live by crew, operators and pilots are recommended to consider providing a demonstration in relation to the following matters:

- point out ordinance signs e.g. no smoking, fasten seatbelts, PED use
- demonstrate the use of seatbelts including how to fasten, adjust and unfasten
- point out emergency exits
- point out emergency escape path lighting
- demonstrate the use of supplemental oxygen dispensing equipment, including location
- point out the location of life jackets and demonstrate their use
- hold up the safety briefing card, point out where it is located and show both sides if double-sided.

6.6 After take-off briefing

6.6.1 At an appropriate time after take-off, operators and pilots are recommended to consider briefing passengers on the following matters:

- seatbelts:
  - compliance with fasten seatbelt signs, recommendation for passengers to keep their seatbelts fastened when seated emphasising the possibility of encountering unexpected turbulence
- smoking:
  - smoking restrictions
- overhead compartments:
  - caution when opening overhead compartments
- PEDs:
  - in-flight use of PEDs and other related policies (refer to paragraph 6.2.1 above).

6.7 Briefing in the event of turbulence

6.7.1 When there is forecast turbulence or the aircraft encounters turbulence, operators and pilots are recommended to consider briefing passengers on the following matters:

- seatbelts:
  - the need to return to their seat and fasten seatbelts
- toilets:
  - the restriction on the use of toilets

- carry-on baggage:
  - the stowage of carry-on baggage.

6.8 Pre-landing safety instructions

6.8.1 Towards the end of the flight and prior to each landing, operators and pilots are recommended to consider briefing passengers on the following matters:

- seatbelts:
  - need for seatbelts and / or restraint systems to be fastened for landing
- carry-on baggage:
  - correct stowage and the importance of leaving carry-on baggage behind in case of evacuation
- cabin secure aspects:
  - required position of seatbacks, tray tables, footrests, IFE, bassinets, window shades etc. for landing
- PEDs:
  - use and stowage of PEDs
- emergency exits:
  - on flights longer than four hours, the location of the emergency exits.

6.9 After-landing safety instructions

6.9.1 After landing, operators and pilots are recommended to consider briefing passengers on the following matters:

- seatbelts:
  - the need to remain seated with the seatbelt fastened until the seatbelt sign is extinguished
- carry-on baggage:
  - the need to keep carry-on baggage stowed until the seatbelt sign is extinguished
- overhead compartments:
  - caution when opening overhead compartments
- smoking:
  - smoking restrictions
- PEDs:
  - use and stowage of PEDs and relevant policies, e.g. use during disembarking and on airport aprons
- disembarkation:
  - instructions regarding safe passenger movement during disembarkation and on airport aprons.

6.10 Transit safety instructions

6.10.1 When the aircraft is on the ground with passengers on board during a transit stop, operators and pilots are recommended to consider briefing passengers on the following matters:

- smoking:
  - smoking restrictions
- PED:
  - the use of PED and relevant policies.

6.11 Fuelling safety instructions

6.11.1 When the aircraft is being fuelled with passengers on board or embarking/disembarking[20], operators and pilots are recommended to consider briefing passengers on the following matters:

- fuelling:
  - fuelling taking place
- seatbelts:
  - seatbelts are to be unfastened
- toilets:
  - refraining from using the toilets
- cabin:
  - refraining from moving around the cabin
- aisles:
  - ensuring aisles and cross-aisles are unobstructed
- smoking:
  - smoking restrictions
- PEDs:
  - use of PEDs and relevant policies.

6.12 Emergency events

> **Note:** Also read Section 5.3 of this AC.

6.12.1 In a prepared emergency, if time permits, operators and pilots are recommended to consider briefing passengers on the following matters:

- crew instructions:
  - importance of remaining calm and following crew instructions and commands
- type of emergency:
  - emergency landing on land or water

[20] CASR 133.195, 135.220, 138.302, 121.240

- cabin secure aspects:
  - required position of seatbacks, tray tables, footrests, IFE, window shades etc.
- carry-on baggage:
  - need for carry-on baggage and personal effects to be stowed securely, the importance of leaving carry-on baggage behind in case of evacuation
- seatbelts:
  - seatbelt, shoulder harnesses and restraint systems to be fastened and secure
- brace position:
  - when and how to adopt brace positions (demonstrated if possible), the need to remain in the brace position until the aircraft has come to a stop, that there may be more than one impact
- exits:
  - exits to be used (if known)
- safety briefing card:
- importance of its contents and the need for passengers to review.

6.12.2 If the emergency landing is on water, operators and pilots are recommended to consider briefing passengers on the following matters:

- life jackets:
  - instructing passengers to fit life jackets, but not to inflate
  - when and how to inflate the life jacket including manual / oral inflation methods
- life rafts:
    - » if emergency procedures include the use of passengers to assist in manoeuvring the life raft, relevant instructions on retrieval from stowage and preparation for use is included
    - » boarding procedures.

6.12.3 Where able-bodied passengers (ABP) are identified by the crew as capable of assisting in an emergency, operators and pilots are recommended to consider assigning ABP and briefing them on the assistance they can provide in relation to the following matters:

- emergency exit rows:
  - review of briefing items in paragraph 6.3.1 above
- emergency exits:
  - the operation of exits in the case of crew incapacitation
- emergency equipment:
  - locating, retrieving or using safety and emergency equipment, such as ELT and life rafts
- PRM and special categories of passengers.

6.12.4 In an emergency, operators and pilots are recommended to consider the following matters related to evacuation timing and conditions:

- aircraft condition after landing or ditching:
  - whether the aircraft is upright, inverted, or partially submerged
  - the stability of the aircraft and any signs of imminent sinking or fire

- emergency flotation systems (EFS):
  - if the aircraft is equipped with EFS and remains upright, evacuation may not be required immediately unless there is smoke, fire, or structural compromise
  - if the aircraft inverts with EFS deployed, the cabin will likely be underwater; evacuation should occur without delay provided it is safe to do so
- aircraft without EFS:
  - a helicopter that is not equipped with EFS, will likely invert and sink rapidly; passengers should be prepared to evacuate immediately upon impact or when directed by crew.
- environmental factors:
  - water conditions, sea state, weather, and proximity to rescue assets may influence timing
  - risk of hypothermia or water ingress should be considered in deciding when to leave the aircraft
- crew instructions:
  - importance of waiting for crew commands unless immediate evacuation is necessary for survival
  - recognition that circumstances may require individual judgment if crew are incapacitated.

7 Briefing guidance for certain types of aircraft

7.1 General

7.1.1 This section provides additional guidance regarding the content and delivery of the passenger briefing information specific to certain types of aircraft, and supplements information provided in previous sections.

7.2 Smaller aircraft

7.2.1 When developing the best means of providing passenger safety information on smaller aircraft that accounts for the size of the cabin and crew workload, it is recommended that consideration be given to the following:

- where the crew member's ability to demonstrate the location and use of the safety equipment is limited by the size of the cabin (e.g. donning a life jacket), conducting some or all of the safety demonstration briefing outside the aircraft or in the departure area prior to boarding
- where the briefing is conducted on board the aircraft, it is completed prior to engine start
- alternate means of transmitting the information (e.g. electronic means, audio-visual presentation, pre-recorded announcements) to assist in reducing the workload for crew, particularly during critical phases of flight and in single pilot operations
- where there is a reliance on passenger assistance with emergency equipment or in an emergency, the passenger safety information includes instructions in this regard
- if there is an in-flight emergency, providing the briefing items in section 6.12 above as far as practicable.

7.2.2 Additional content considerations for smaller aircraft operations regarding the safety briefing provided to passengers prior to take-off include:

- emergency equipment:
  - if emergency procedures include the use of passengers to assist in locating, retrieving or using the safety and emergency equipment, the relevant instructions for that equipment e.g. fire extinguisher, ELT, first aid kit, survival equipment, life rafts
- ditching procedures:
  - if the flight involves overwater operations, passengers are briefed on ditching procedures.

7.3 Rotorcraft operations

7.3.1 Operations with rotorcraft carry the extra risk of the main and tail rotors. It is imperative that passengers are briefed on the risk and how to manoeuvre safely around the rotorcraft.

7.3.2 Safety procedures may vary slightly from one rotorcraft model to another. The following may be included in relevant passenger briefings depending on the type of operation:

- approaching and leaving:
  - remain well clear of the landing area when the rotorcraft is arriving or departing
  - wait for instructions to approach or leave the rotorcraft

  - if possible, wait until the rotors stop turning
  - approach and leave by the downslope side for rotor clearance
  - approach and leave to the side or front in a crouched position, never by the rear of the rotorcraft
  - when approaching the rotorcraft, remain in the pilot's field of view at all times
- tools and cargo:
  - if tools or cargo are to be carried to or from the rotorcraft, assign each item to a person for carriage to avoid delay or confusion under the rotor disc
  - carry tools horizontally, below waist level, never upright, over the shoulder or above the head
- loose items:
  - never throw items towards or out of a rotorcraft
  - hold firmly onto hats and loose articles
  - never reach up or dart after a hat or other object that might have blown off or away
- dirt and debris:
  - protect eyes against blown dust and particles by shielding them with a hand or by wearing sunglasses, safety glasses or safety goggles
  - if sudden blindness occurs due to dust or a blowing object, stop and crouch lower, or sit down and wait for assistance
  - never feel their way toward or away from the rotorcraft
- rotor blades:
  - emphasise the need to stay clear of main and tail rotors at all times.

7.3.3 It is recommended that the pre-flight passenger briefing be conducted by the pilot in command prior to entering the rotorcraft and engine start.

7.3.4 Additional content considerations for rotorcraft operations regarding the safety briefing provided to passengers prior to take-off include:

- seatbelts:
  - importance of using a shoulder harness(es) where fitted
- rotor awareness:
  - how and when to approach and move away from a rotorcraft with its blades turning
- flight safety and instructions:
  - remain in the seat unless given permission to move, keep clear of the flight controls and any switches at all times, do not distract the pilot during take-off, manoeuvring or landing
- exit location and operation:
  - familiarise themselves with the inside of the aircraft and exit locations
  - locating the exit in relation to their left or right knee to assist with orientation if the aircraft lands or comes to rest in another position other than the upright position
  - operation of all exits
- emergency equipment:

  - if emergency procedures include the use of passengers to assist in locating, retrieving or using the safety and emergency equipment, the relevant instructions for that equipment e.g. fire extinguisher, ELT, first aid kit, survival equipment

- underwater egress:
  - remain calm and take a deep breath prior to being submersed under water
  - open their eyes and orient themselves in relation to the emergency exit
  - if seated next to the emergency exit, locate the exit handle in relation to the left or right knee
  - open the exit noting that the exit may not open until the cabin is sufficiently flooded and inside water pressure has equalised
  - do not release seatbelt and shoulder harness until ready to exit
  - exit by placing one hand on a fixed part of the aircraft, and not letting go before grabbing another fixed part (hand over hand)
  - pull themselves through the exit, do not let go until out of the aircraft
  - resist the urge to kick to prevent getting caught in loose wires or debris or causing injury to another person exiting behind
  - follow the bubbles to the surface, if this is not possible, inflate the life jacket as a last resort
  - do not inflate the life jacket until outside the exit and clear of wreckage.

Note: Transport Canada publication TP 2228E-18 provides information on underwater egress that could be incorporated into the passenger briefing.

7.3.5 In the event of an inflight emergency, it is recommended that the operator or pilot consider providing the briefing items in section 6.12 above as far as practicable.

7.3.6 Additional content considerations for rotorcraft operations regarding briefings provided in the event of an emergency include:

- exits:
  - locate all emergency exits
  - note where they are in relation to right- or left-hand side, and
  - visualise how to open them
- emergency landing:
  - move clear of the aircraft only after rotor blades stop or when instructed to do so by the pilot or crew
  - assist others to evacuate well clear of the rotorcraft
  - remove first aid kit and other emergency equipment after no threat of fire.

7.4 Seaplane and floatplane operations

7.4.1 Additional content considerations for seaplane / floatplane operations regarding the safety briefing provided to passengers prior to take-off:

- seatbelts:
  - to be worn at all times

  - shoulder harnesses must be used (if fitted)
  - practice finding and releasing the latch with both hands and their eyes closed until they are sure it can be done in an emergency
- life jackets:
  - requirement to wear the life jacket inflight (if applicable)
- exit location and operation:
  - familiarise themselves with the inside of the aircraft and exit locations
  - locating the exit in relation to their left or right knee to assist with orientation if the aircraft lands or comes to rest in another position
  - operation of all exits
- underwater egress:
  - (refer to paragraph 7.3.4 above).

Note: Transport Canada publication TP 2228E-18 provides information on underwater egress that could be incorporated into the passenger briefing.

7.4.2 In the event of an inflight emergency, it is recommended that the operator or pilot consider providing the briefing items in section 6.12 above as far as practicable.

7.4.3 Additional content considerations for seaplanes / floatplanes regarding briefings provided in the event of an emergency:

- exits:
  - locate all emergency exits
  - note where they are in relation to right- or left-hand side, and
  - visualise how to open them.

Appendix A
Brace positions

A.1 Brace position and survivability

A.1.1 To enable the physical evacuation of the aircraft, it is important that occupants take actions to minimise the potential for injuries during the crash sequence. One action that occupants can take to contribute to their survival is to assume an appropriate brace-for-impact position. This is an action where a person pre-positions their body against whatever they are most likely to be thrown against, and which may significantly reduce injuries sustained.

A.1.2 The best brace position for each person depends on factors such as the size and physical limitations of the individual, the layout of the interior configuration of the aircraft, the type of emergency and the magnitude, direction and sequence of crash forces. Many aircraft have seating arrangements that result in very limited seat pitch (the seat-to-seat distance from one point on the seat to the same point on the seat immediately forward or aft), or may have varying seat pitches, such as those found in aircraft configured with first class, business class and / or economy class. Other considerations include an adult holding an infant, occupants of child restraint systems, aft-facing seats, side-facing seats, seats equipped with a shoulder or 4 point harness etc. Notwithstanding all of the variables, significant benefits can result from assuming the brace for impact positions described in this document[21].

A.1.3 The goal of a brace-for-impact position, commonly referred to as the brace position, is to reduce an aircraft occupant's injuries during a crash sequence. Injuries may result from the initial impact(s) of the aircraft against terrain, or obstacles when an occupant's body and limbs flail around the fixed point of the seatbelt. Injuries may also result from secondary impact – the impact(s) between a body segment, such as the head or a flailing limb, and whatever it might hit during the crash sequence. Head injuries are often associated with secondary impact during an accident and can be the cause of, or a factor contributing to, fatalities.

A.1.4 The brace position serves two purposes. It reduces:

a. flailing by having the forward-facing occupant flex, bend, or lean forward over their legs in some manner, and

b. secondary-impact injuries by pre-positioning the body, predominantly the head, against the surface that it would otherwise strike during that secondary impact, thus reducing the momentum of the head and other parts of the body.

A.2 General

A.2.1 These general instructions are applicable to all brace positions as listed:

a. The lower torso should be firmly against the back of the seat.

b. The lap strap portion of the seatbelt should be worn as tight and as low across the hips as possible. The more tightly the lap strap is adjusted, the better restraint it will provide.

c. If the seatbelt includes a shoulder harness, or shoulder harnesses, the harness should be adjusted so that it is tight but does not pull the lap portion of the seatbelt upward.

d. The webbing of a lap strap and shoulder harness upper torso restraints should lie flat against the body and should not be twisted.

[21] TCCA AC 700-036(1) Brace for Impact Positions for all Aircraft Occupants

e. Knees should be pressed together, and feet should be flat on the floor.

f. It is suggested that shoes be left on, with the exception of high / spiked heeled shoes that could puncture an evacuation slide. Leaving shoes on not only provides protection against sharp or molten metal, fuel, broken trees, debris etc., but also acts as an insulator against snow, ice and hot surfaces, and can expedite escape away from the aircraft.

g. If removal of very high-heeled shoes is necessary, shoes must be stowed in an approved stowage area (such as an overhead locker) and should not be placed in the seat pocket where they could injure the person while assuming the brace position.

h. Pillows or blankets should not be used between the passenger and the object they would brace against. Pillows and blankets are not usually designed to absorb energy or distribute impact loads over the body, and they could increase the likelihood of injury by giving a false impression that the body is being properly supported. Also, pillows and blankets create additional clutter in aisles which can be an impediment in an evacuation.

A.3 Brace positions for passengers

A.3.1 Although extensive research has been conducted on passenger brace-for-impact positions, no single position has been determined. There is great variation in passenger characteristics and abilities, in-seat class characteristics, seat pitch and direction of travel. Other variables include restraint design and airbags, and experimental testing protocols. In cases where the recommended brace position cannot be achieved, it is possible to identify a few general principles that will allow an appropriate brace position to be selected on the basis of factors which can be predetermined.

A.4 Forward-facing passenger seat fitted with a lap strap seatbelt

A.4.1 This guidance describes how to adopt the brace position for a person occupying a forward-facing passenger seat fitted with a lap strap seatbelt only. The instructions presented may be used by cabin crew to brief passengers during cabin preparation for an anticipated emergency landing or ditching. Passengers should remain in the brace position until the aircraft comes to a stop or until directed by the cabin crew to evacuate the aircraft.

A.4.2 In a forward-facing passenger seat fitted with a lap strap seatbelt only, passengers should brace according to Figure 5 below and comply with the following instructions:

a. Sit as far back as possible.

b. Fasten seatbelt and tighten firmly (low across the hips to prevent submarining when a passenger slides forward under a loosely fitted seatbelt. The seatbelt should not be twisted).

c. Tuck chin onto chest.

d. Bend forward (roll up into a ball).

e. Place head against the seat in front.

f. Place hands on top of head, or

g. Place arms at sides of lower legs or hold lower legs (holding onto the lower legs may provide a more stable position), and

h. Place feet flat on the floor, as far back as possible, or

i. If passengers are seated at a bulkhead row or cannot reach the seat in front

j. bend forward and place hands on top of head, or

k. bend forward and place arms at sides of lower legs or hold lower legs.

Figure 5: Brace positions in forward facing passenger seats equipped with a lap strap seatbelt only

Source: ICAO Doc 10086 Manual on Information and Instructions for Passenger Safety (first edition).

A.5 Forward-facing seats fitted with a lap strap and single diagonal shoulder harness

A.5.1 In a forward-facing passenger seat fitted with a lap strap and single diagonal shoulder harness, passengers should brace according to Figure 6 below and comply with the accompanying instructions:

a. Adjust shoulder harness to remove slack.

b. Rest chin on sternum, head should be tucked down as far as possible to try to eliminate secondary impact of the chin with the sternum.

c. Hands can be positioned on the lap, front edge of the seat can be held (do not lock elbows or wrists), or occupant can sit on palms of their hands (palms must be ‘up’ to avoid breaking wrists). Do not hold on to restraint system with hands; this can introduce slack into the restraint system.

Figure 6: Forward facing passenger seats equipped with a lap strap and shoulder harness with single diagonal strap

Source: ICAO Doc 10086 Manual on Information and Instructions for Passenger Safety (first edition).

A.6 Aft-facing passenger seat fitted with a lap strap seatbelt

A.6.1 Instructions for aft facing seats equipped with a lap strap only should include (refer to the illustration in Figure 7 below):

a. Sit upright with head firmly against the seatback, or bulkhead behind

b. Arms may be placed on the arm rests

c. If arm rests are not available, hands can be positioned on lap

d. Hands should not be clasped behind head or neck (this may increase stress on the neck due to the mass of the arms and hands as they react during impact).

Figure 7: Aft facing passenger seat, with a lap strap only

Source: ICAO Doc 10086 Manual on Information and Instructions for Passenger Safety (first edition).

A.7 Aft-facing passenger seat fitted with a lap strap and shoulder harness

A.7.1 Instruction for aft facing seats equipped with a lap strap and shoulder harness should follow the same procedures as for a forward-facing seat with lap strap and shoulder harness, except that the head should be placed firmly against the head rest. Hands should not be clasped behind head or neck because this may increase stress on the neck due to the mass of the arms and hands as they react during impact. Refer to the illustration in Figure 8 below.

Figure 8: Aft facing passenger seat, with a lap strap and shoulder harness with single diagonal strap

Source: ICAO Doc 10086 Manual on Information and Instructions for Passenger Safety (first edition).

A.8 Side-facing passenger seat fitted with a lap strap seatbelt

A.8.1 For side-facing seats equipped with a lap strap only, whenever possible, occupants should be relocated to forward-facing or aft-facing seats. Side-facing seats without lateral support for the whole body, including the legs, do not provide good protection from impact loads.

A.8.2 When forward-facing or aft-facing seats are not available, bend over and lean toward the front of the aircraft, then rest upper torso and head against whatever might be contacted to help reduce head flailing.

A.9 Side-facing passenger seat fitted with a lap strap and shoulder harness

A.9.1 For side-facing seats equipped with a lap strap and shoulder harness, place crossed arms over chest and tuck hands and thumbs under armpits, and bend head forward.

A.10 Brace positions to avoid

A.10.1 Based on medical subject matter expert (SME)interpretation and opinion, when adopting the brace position, a passenger should avoid certain positions, as shown in Figure 9 below:

a. The passenger should avoid having the head tilted backward, that is, the neck should not be extended, but should be bent forward to reduce the risk of injury to the neck and / or larynx.

b. The passenger should not rest their head on the crossed forearms, which risks fracturing both forearms.

c. The passenger should not rest their head on their hands, which risks fracturing both hands / fingers.

Figure 9: Positions to avoid when adopting the brace position

Source: ICAO Doc 10086 Manual on Information and Instructions for Passenger Safety (first edition).

A.11 Unacceptable brace positions

A.11.1 Some brace positions are unacceptable as they increase the risk of injury to persons occupying a forward-facing passenger seat fitted with a lap strap seatbelt only, as shown in Figure 10 below:

a. Passengers should avoid upright positions as their head may hit the surface in front during the secondary impact.

b. Passengers should avoid stretching out their arms or legs and pressing them against a surface in front of them.

c. Passengers should also refrain from trying to physically restrain a child or another passenger in an adjacent seat or assisting another person in maintaining a brace position, as this may increase the risk of injury.

d. These statements are based on the results of some sled-impact tests, examinations of survivors and victims of crashes, and medical and engineering SME's interpretations and opinions.

Figure 10: Examples of unacceptable brace positions

Source: ICAO Doc 10086 Manual on Information and Instructions for Passenger Safety (first edition).

A.12 Children and infants

A.12.1 CASA recommends that infants and children whose weight is less than 26 kg (60 lbs) and whose height is less than 125 cm (49 inches), occupy an approved child restraint system (CRS) on board aircraft, in a seat of their own.

A.12.2 The use of a CRS provides an equivalent level of safety to infants and children as that afforded to adult passengers wearing seatbelts.

A.12.3 Generally, children occupying a passenger seat should utilise the same brace position as adults, appropriate to their height.

A.12.4 Adults holding infants should provide as uniform support as possible to the infant's head, neck, and body to minimise the possibility of injury due to flailing.

Note: For further guidance refer to AC 91-18 - Restraint of infants and children; ICAO Doc 10049 Manual on the Approval and Use of Child Restraint Systems.

A.13 Brace positions for pregnant women or passengers who have physical or space limitations

A.13.1 This guidance presents a proposed brace position for pregnant women or passengers who have physical or special limitations and are occupying a forward-facing passenger seat fitted with a lap strap seatbelt only. Recommendations are not based on any testing, but rather on a combination of medical SME interpretation and opinion:

a. Slide back in the seat as far as possible towards the backrest; try to ensure lower back is against the backrest.

b. Fasten seatbelt low and tight; belt must not be twisted; ensure that the seatbelt is below the tummy.

c. Place legs as wide apart as possible to assist with forward bending; bend forward, leaning against the seat in front (if possible).

d. Place hands on the back of the head one on top of the other; do not interlock fingers; tuck elbows in. Alternatively, place arms at the side of the lower legs.

e. If there is no seat in front, bend over and either place hands on the back of the head or place arms at the side of the lower legs; hold lower legs.

f. Keep feet flat on the floor with lower legs positioned slightly rearward of the knees, if possible.

A.14 Rotorcraft - Lap strap and single diagonal shoulder harness

A.14.1 This restraint configuration is often colloquially known as a '3-point harness'.

A.14.2 Rotorcraft passengers and crew members should adopt the same or similar positions as recommended for aircraft seats of similar orientations and restraint system configurations in sections A.5, A.7 and A.9 of this AC, however; consideration must be given to the specific characteristics of the rotorcraft type, model and seating arrangements.

A.14.3 If possible, operators should consider methods where occupants are also briefed to select a reference point at the seat belt buckle or hold the edge of the seat pan, if ordered to brace to help maintain orientation in the event of a rollover.

A.15 Rotorcraft (on-shore helicopter) - Forward-facing seat fitted with a lap strap seatbelt only

A.15.1 Brace positions for onshore helicopter occupants in forward-facing seats equipped only with a lap strap should include the standard forward-facing brace positions for fixed-wing occupants (refer to section A.4 above).

A.16 Rotorcraft (on-shore helicopter) - Forward-facing seat fitted with a lap strap and shoulder harness

A.16.1 Passengers should adopt the brace according to Figure 11 below and the accompanying instructions. This brace position provides the occupant with the best impact protection and also minimises the risk of disorientation:

a. Occupants should adopt an erect brace position with the arms crossed over the chest and the chin tucked down, resting in the space created between the arms.

b. Fingers should be tucked under the shoulder straps of the shoulder harness, if possible.

c. Thumbs should be facing up, not tucked under the shoulder harness. Knees should be pressed together, feet slightly apart and heels slightly forward of the seat.

Figure 11: Forward facing seat, lap strap and shoulder harness with dual upper torso straps, onshore helicopter occupant

Source: ICAO Doc 10086 Manual on Information and Instructions for Passenger Safety (first edition).

A.17 Rotorcraft (on-shore helicopter) - Aft-facing seat fitted with a lap strap and shoulder harness with dual upper torso straps

A.17.1 Passengers should adopt the brace according to Figure 12 below and the accompanying instructions:

a. Occupants should adopt an erect brace position with the arms crossed over the chest.

b. Fingers should be tucked under the shoulder straps of the shoulder harness (if possible).

c. Thumbs should be facing up, not tucked under the shoulder harness.

d. Knees should be pressed together, feet slightly apart and heels slightly forward of the seat.

e. Head should be placed firmly against the head rest or seatback.

Figure 12: Aft facing seat, lap strap and shoulder harness with dual upper torso straps, onshore helicopter occupant

Source: ICAO Doc 10086 Manual on Information and Instructions for Passenger Safety (first edition).

A.18 Rotorcraft (off-shore helicopter) brace positions and underwater egress

A.18.1 The crash dynamics for helicopters, particularly ditching in water, are different to those for fixed-wing aircraft. Helicopters tend to crash vertically or, under autorotation conditions, at more acute angles to the surface of the water or ground. The vertical component of the crash forces can be much greater than the forward component.

A.18.2 Disorientation is likely if the helicopter sinks and rolls and is intensified by inrushing water, which destabilizes the whole body in the seat. To address the effects of disorientation caused by sudden immersion and inversion and the effects of in-rushing water, it is suggested to form a manual physical reference point by maintaining a positive grip on the aircraft seat with the hand furthest from the emergency exit. The manual physical reference point allows the occupant to form a mental image of which way to proceed to an emergency exit after an accident and will aid in the development of automatic performance in an emergency. The hand closest to the exit can then be used to locate and jettison the exit.

A.19 Rotorcraft (off-shore helicopter) - Forward-facing seat fitted with a lap strap seatbelt only

A.19.1 For offshore helicopter operations, where occupants are required to wear a helicopter passenger transportation immersion suit throughout the trip, to and from the offshore installation or vessel, occupants should brace according to Figure 13 below and the accompanying instructions:

a. Occupants should bend forward and rest their head and chest against their upper legs.

b. The head should be face down in the occupant's lap and not be turned to one side.

c. The arm closest to the emergency exit should be wrapped under the occupant's legs.

d. The hand furthest from the emergency exit should grip the edge of the aircraft seat with the elbow tucked in close to the occupant side.

e. If there is an arm rest, the elbow should be tucked next to the body and not placed on or over the arm rest.

f. Knees should be pressed together, feet slightly apart and heels slightly forward of the seat.

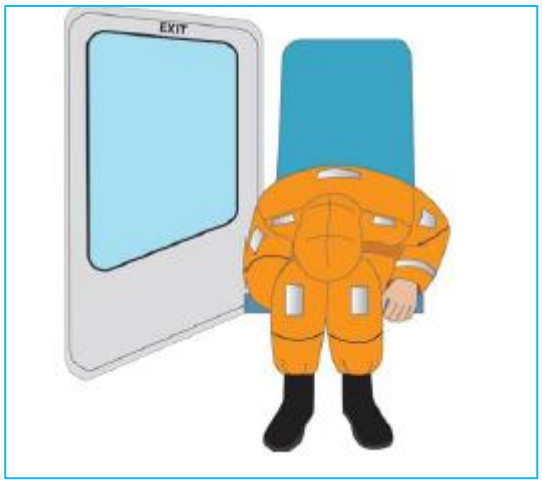

Figure 13: Forward facing seat, lap strap only, offshore helicopter occupant

Source: ICAO Doc 10086 Manual on Information and Instructions for Passenger Safety (first edition).

A.20 Rotorcraft (off-shore helicopter) – Aft-facing seat fitted with a lap strap seatbelt only

A.20.1 An offshore helicopter occupant in an aft-facing seat wearing a helicopter passenger transportation immersion suit in a seat with a lap strap only should brace according to Figure 14below and the following instructions:

a. Occupants should adopt an erect brace position with arms extended and both hands gripping the edge of the aircraft seat.

b. The occupant should avoid locking out their elbows in making contact with the front edge of the seat.

c. Knees should be pressed together, feet slightly apart and heels slightly forward of the seat.

Figure 14: Aft facing seat, lap strap only, offshore helicopter occupant

Source: ICAO Doc 10086 Manual on Information and Instructions for Passenger Safety (first edition).

A.21 Rotorcraft (off-shore helicopter) – seat fitted with a lap strap and shoulder harness with dual upper torso straps

A.21.1 Offshore helicopter occupants wearing a helicopter helicopter-passenger-transportation immersion suit in a seat with a shoulder harness should adopt the same brace positions as illustrated in Figure 9 and Figure 10 for onshore helicopter operations.

A.21.2 Generally, passengers and crew members are advised not to hold on to the restraint system as it can introduce slack into the system. However, for offshore helicopter occupants in a seat with a shoulder harness, it is suggested that they maintain a positive grip on the restraint system with the fingers (thumbs should be facing up) to assist the occupant with egress upon impact. By maintaining a grip on the restraint system, the occupant need only slide their hand down the harness to unfasten their safety belt. Doing this may save time and reduce or limit the effects of disorientation caused by a helicopter sinking and rolling.

Appendix B
Visual safety messaging for power bank charging and stowage

B.1 Lithium battery safety risks

B.1.1 Lithium batteries differ from other conventional batteries in that the cells are constructed with a flammable electrolyte, which can be forcibly released when a cell is in a state of thermal runaway.

B.1.2 Thermal runaway is a chemical reaction within the cell itself that results in a dramatic and uncontrolled rise in both temperature and pressure. The temperature rise may be large enough to set adjacent cells into thermal runaway. This results in the battery expelling its contents, including the flammable electrolyte and flammable gas, which may then be ignited by the associated heat or burning surroundings of the battery.

B.1.3 As such, lithium batteries have the capacity to act as both the ignition (heat source) and the fuel for a subsequent fire, and therefore represent a specific hazard that must be considered. Another unique and significant hazard that may result from a lithium battery thermal runaway event, is the expulsion of large quantities of flammable gas. The flammable gas has the potential to collect and ignite, resulting in a significant overpressure event. (ICAO, 2020).

B.2 Visual safety messaging

B.2.1 Recent research conducted into how passengers comprehend safety information pertaining to carriage of items such as power banks that contain lithium-ion batteries and the potential for thermal runaway revealed that their awareness remains low and development of unified, visual safety messaging can be instrumental in mitigating requisite risks.

B.2.2 The research concentrated specifically on developing symbol-based communication intended to raise operator and passenger awareness on the dangers associated with storing power banks in overhead compartments including:

a. power banks must not be charged using in-seat power outlets

b. power banks must not be stored in the overhead compartment of aircraft

c. it is acceptable to charge a phone using the in-seat power outlet.

Refer to Figure 15 and Figure 16 for example symbols.

B.2.3 The research concluded that:

a. symbols communicate effectively without language, supporting greater passenger awareness regardless of literacy or language fluency

b. the presence of symbols on safety briefing cards can enhance operator safety posture and reduce liability in case of an incident

c. clearer global messaging and communication are essential regarding lithium-ion batteries, including:

i. *Where they are found:* lithium-ion batteries are in many everyday devices, such as smartphones, laptops, power tools.

ii. *Potential hazards:* these batteries pose risks like fire, explosion, and chemical leakage if damaged, overcharged, or improperly disposed of. Overheating, short circuits and punctures can also lead to dangerous situations.

iii. *Proper handling and safety:* guidelines should focus on correct charging practices, storage away from extreme temperatures, and not overcharging. There should also be clear directions on how to dispose of or recycle them safely, and how to handle incidents like leaks or fires.

B.2.4 Overall, better communication would assist in prevention of operator incidents, improve safety protocols and increase passenger.

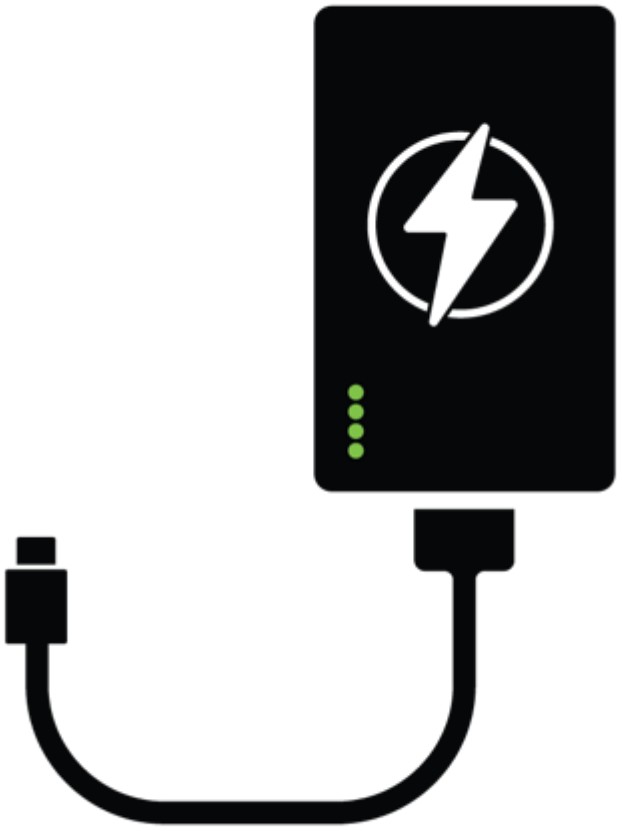

Figure 15: Power bank symbol with cord

Source: The Interaction Group.

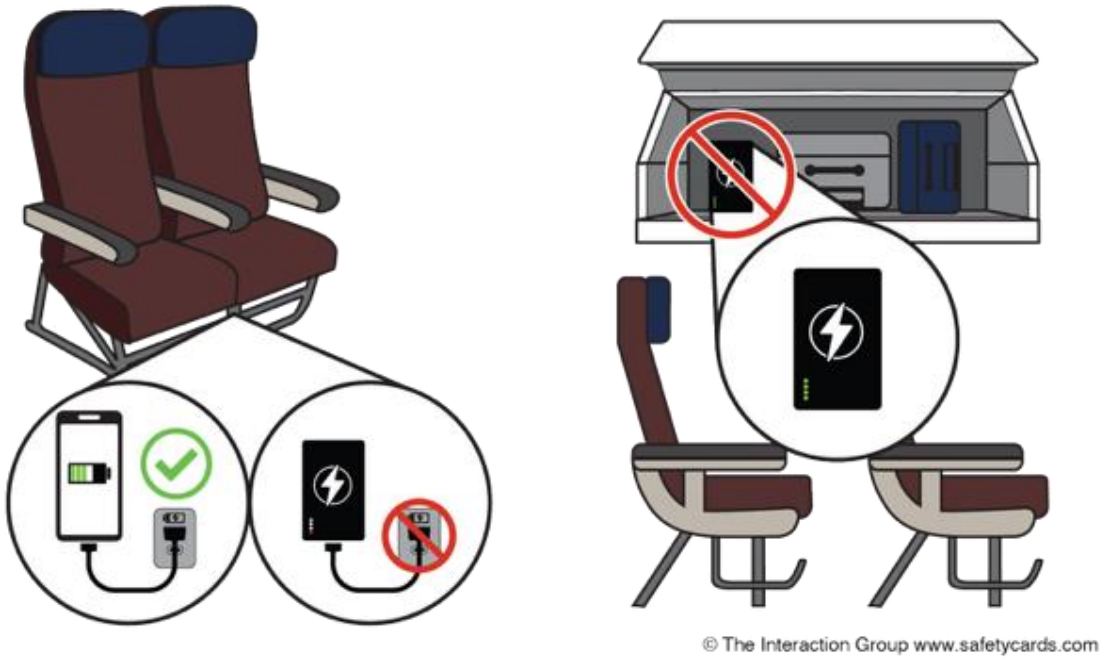

Figure 16: Combined symbols depicting appropriate charging at in-seat charging station and no storage in overhead compartment

Source: The Interaction Group.