

Cabin Safety Bulletin No.9 - Management of cabin baggage in an aircraft evacuation

Who does this bulletin apply to?

This document applies to all operators of Australian registered aircraft and should be read in conjunction with sub regulation 253 (4) of CAR 1988, Civil Aviation Order 20.11.14 and Civil Aviation Order 20.16.3.

What is the purpose of this bulletin?

Crashworthiness standards require an aircraft cabin to be designed so occupants are protected as far as possible from impact forces (FAA, 1991). The aim is to ensure that as many passengers and crew members as possible survive the impact in a condition that gives them the ability to escape.

It is critical that surviving occupants are evacuated in accordance with initial manufacturer certification using 50 percent of exits within 90 seconds. Studies however have highlighted that passengers will endeavour to collect their belongings prior to evacuating an aircraft, particularly where danger to life is not evident. Therefore, it is essential that cabin crew are trained to be assertive in directing passengers to leave personal belongings behind in an evacuation, and what to do in the event of non-compliance with those instructions.

This bulletin is provided for information and guidance to remind operators of the dangers associated with passengers retrieving carry-on baggage during an aircraft evacuation; prepare for this eventuality and have strategies in place to mitigate the risks.

This bulletin describes an example of an acceptable means, but not the only means, of demonstrating compliance with regulations and standards. On its own this bulletin does not change, create, amend or permit deviations from regulatory requirements, nor does it establish minimum standards.

Background

Some marketing initiatives, commercial pressure and passenger perception encourage travellers to carry more luggage in the cabin. In addition to these factors, aircraft manufacturers are producing aircraft with larger overhead lockers capable of storing more baggage.

Passengers may not be aware of the risks associated with excess carry-on baggage or the risks associated with retrieving baggage during an evacuation. The consequences could include impeding an orderly and timely evacuation, damaging a slide and increasing the risk of injury.

Many evacuations have shown that passengers tend to attempt to retrieve their belongings in an evacuation, despite cabin crew repeatedly instructing them to abandon their baggage.

Such situations may lead to passenger management and crowd control issues in an evacuation, as passengers insist on taking belongings with them during an evacuation. Where passengers carry

baggage, they are not focused on following crew member instructions, thereby losing situational awareness, particularly regarding hazards that could cause injury or death.

Research

Accident investigations conducted worldwide over the past thirty years revealed that many passengers tried to take their belongings with them during an evacuation, even where fire was visible.

A 1997 accident report on the evacuation of a Lockheed L-1011 described passengers colliding and piling up on each other at the base of a deployed slide. This was compounded by the fact that passengers attempted to take belongings with them as they left the aircraft, creating trip hazards in the aisle as things were dropped and/or were cluttering exits as items were removed by cabin crew.

An NTSB study conducted in 2000 following 46 emergency evacuations discovered several findings including:

- ▶ Nearly half of the passengers, that is, 208 out of 419 interviewed, admitted that they had attempted to remove a bag during the evacuation.
- ▶ Interviews conducted with 36 cabin crew members revealed that passengers taking bags was the biggest impediment to an expeditious evacuation
- ▶ Items removed caused injuries to cabin crew or passengers, and/or caused a pile up of baggage at unopened exits that may need to be subsequently used due to a life-threatening situation
- ▶ On arriving at the door exit, passengers realised that jumping onto the slide with cabin baggage was not appropriate, subsequently throwing it down the slide and hitting other passengers or damaging the slide
- ▶ Passengers arriving at an over wing exit with larger items, such as musical instruments or picture frames, slowed egress or were unable to fit through
- ▶ Exposure to smoke inhalation occurred due to the speed of egress in a smoke-filled cabin
- ▶ Passengers were going against the main passenger flow, slowing the egress of others
- ▶ A shift in the aeroplane attitude caused piled up baggage to slide and create a hazard.

Following the landing of American Airlines flight 383 in Chicago 2016, where the wide body aircraft was destroyed by fire, passengers could be seen descending slides with cabin baggage. The issue is not isolated to only one part of the world. Many passengers onboard an Emirates aircraft that crashed onto a runway at Dubai Airport in 2016, could be seen in video footage retrieving bags from the overhead stowage even as cabin crew directed them to leave everything behind. Many others were photographed on the tarmac with baggage moments after Asian Airlines flight 214 crashed short of the runway at San Francisco in 2013.

In 2017, the University of Coventry conducted a study into retrieval of baggage, which found passengers would salvage carry-on baggage during an evacuation because of the high value nature of their goods.

A safety notice issued by the UK Civil Aviation Authority in 2015 stated “significant numbers” of passengers had been taking carry-on baggage with them during emergencies. It called on airlines to consider making sterner pre-flight warnings and enhancing emergency procedures training for cabin crew.

Strategies

Strategies that could be considered to mitigate risks of passengers retrieving carry-on baggage in an emergency evacuation include:

- ▶ Reinforcing the requirement to leave personal items behind during announcements through mediums such as pre-flight safety, emergency and before landing briefings
- ▶ Incorporating clear illustrations into Safety Instruction Cards depicting retrieval of carry-on baggage must not be taken in an emergency evacuation
- ▶ Use of simple, clear crew commands directing passengers to leave carry-on baggage behind during an evacuation
- ▶ Incorporating expected human responses during emergency situations within cabin crew training together with persuasive techniques to encourage leaving baggage on the aircraft.

Other operator strategies include reviewing current provisioning pertaining to the carry-on baggage allowance with respect to dimension and weight and how this is policed and monitored during passenger embarkation. Operators must ensure qualitative risk assessment practices and management are applied when reviewing passenger behaviour during embarkation in standard operations as well as during an aircraft evacuation.

Operators could consider establishing a robust line operations safety audit program to gather data on passenger behaviour with respect to carriage of carry-on baggage and non-compliance with regulatory and company requirements. Interrogation and management of this data and that acquired from occurrence reporting could also be considered together with change management and safety promotion (training and awareness) resulting from this review in concert with the Safety Management System.

Cabin crew considerations

Operators should identify accepted action for cabin crew when confronted with adverse situations during an emergency evacuation together with ways to mitigate passenger non-compliance. Actions and resultant issues for crew to consider include:

- ▶ Forcibly removing carry-on baggage at an exit may lead to:
 - ▶ excess baggage blocking exit routes
 - ▶ slowed rate of egress due to confrontation
 - ▶ injury to cabin crew due to relocating baggage away from the exit
 - ▶ physical confrontation with passengers preventing the continuation of evacuation procedures
- ▶ Carry-on baggage thrown from the aircraft may:
 - ▶ cause injury to persons outside the aircraft
 - ▶ lead to a loss of cabin crew situational awareness
 - ▶ lead to injury of cabin crew members performing this task
 - ▶ damage ground equipment or slides
- ▶ Allowing passengers to remove baggage they insist on taking can:

- ▶ slow passenger egress
- ▶ lead to injury of passengers or others using the slide
- ▶ cause injury to individuals assisting evacuees away from the base of the slide
- ▶ lead to damage of the slide
- ▶ cause a build-up of debris at the base of the slide.

Cabin crew training

Initial intake and continuing training should include scenario-based simulations as this will enhance crew knowledge and skill retention as to possible passenger behaviour that may present during an evacuation.

Training programmes should emphasise management of scenarios where passengers bring carry-on baggage to the exit during an evacuation and promote critical thinking and independent decision making amongst crew members as the situation dictates.

Training programs should cover:

- ▶ passenger behaviour in emergency situations
- ▶ crew decision making
- ▶ situational awareness
- ▶ risk assessments during emergency situations
- ▶ cabin crew assertiveness
- ▶ anticipation of likely evacuation events
- ▶ cultural awareness and the impact on passenger behaviour
- ▶ service and emotional support animals and the effect on passenger behaviour
- ▶ cabin conditions that influence behaviour during an evacuation (for example, smoke filled cabin creates urgency, whereas no smoke or visible flames may lead to a lack of urgency; or a shift in the aircraft attitude causing passengers to fall whilst trying to walk down an aisle with their baggage)
- ▶ passengers with reduced mobility
- ▶ family travel, for example, parents and children may not be sitting together in the cabin.

During an evacuation, cabin crew must instil in passengers that crew members are in charge. Assertiveness starts during passenger embarkation and must be maintained if an emergency eventuates. Eye contact is critical; however, darkness and smoke may disorient passengers necessitating loud commands to move them into action and out of the cabin.

Well defined emergency training modules enable crew members to change their language to fit the situation. It is up to cabin crew to choose the most effective methods to control passengers as the situation warrants. Commands must be concise, forceful and commanding giving potent direction with the least possible wording.

Evacuation training must also emphasise why passengers should not take carry-on baggage with them, that is, the act of doing this can compromise not only their own safety but that of all occupants. The level of risk may not be apparent at the time of evacuation, however, where life threatening events occur, seconds count.

Additional Resources

This section presents existing guidance material. This guidance includes, but is not limited to, the following:

1. [International Civil Aviation Organisation \(ICAO\)](#) (2018). Manual on Information and Instructions for Passenger Safety (Doc 10086).
2. Australian Transport Safety Bureau (2006). Evacuation Commands for Optimal Passenger Management. [ATSB Research and Analysis Report, April 2006](#) .
3. United States: The Federal Aviation Administration (FAA) [Advisory Circular AC 25.803-1A Emergency Evacuation Demonstrations](#) .
4. [NTSB Safety Study: Emergency Evacuation of Commercial Airplanes](#) . Report no. NTSB/SS-00/01. June 27, 2000.
5. [Flight Safety Foundation Cabin Crew Safety May-June 2004](#) . Attempts to retrieve carry-on baggage increase risks during evacuation. Vol. 39 No. 3.
6. [Uncontained Engine Failure and Subsequent Fire American Airlines Flight 383 28OCT16](#)
7. [Descent Below Visual Glidepath and Impact with Seawall Asian Airlines Flight 214 24JUN14](#)

Further information

View the [cabin safety \[/aircraft/landing-page/cabin-safety\]](#) pages.

If you have an inquiry, please contact the cabin safety team on 131757 and ask to speak to a cabin safety inspector or email cabinsafety@casa.gov.au.

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