Australian Government
Civil Aviation Safety Authority

Cabin Safety Bulletin

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Cabin Safety Bulletin No. 14/15 - Cabin safety incident investigation

A Cabin Safety Bulletin is an advisory document that alerts, educates and makes recommendations about Cabin Safety matters.

1 Purpose

This CSB provides guidance for cabin investigators responsible for investigation of an incident, extracts of which have been taken from ICAO Doc 10062.

Other aspects required during an incident investigation are outside the scope of this bulletin.

This bulletin does not seek to replace formal cabin investigator training.

2 Target audience

This bulletin applies to:

- Australia air transport operators
- Cabin safety supervisory personnel

3 Definitions

Text.

Term	Definition
Able-bodied passenger	Passengers who are clearly physically able and are willing to help cabin crew maintain good order and discipline on board the aircraft.
Accident	An occurrence associated with the operation of an aircraft which, in the case of a manned aircraft, takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, or in the case of an unmanned aircraft, takes place between the time the aircraft is ready to move with the purpose of flight until such time as it comes to rest at the end of the flight and the primary propulsion system is shut down, in which: a) a person is fatally or seriously injured as a result of: o being in the aircraft, or o direct contact with any part of the aircraft, including parts which have become detached from the aircraft, or o direct exposure to jet blast, except when the injuries are from natural causes, self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew; or b) the aircraft sustains damage or structural failure which: o adversely affects the structural strength, performance or flight characteristics of the aircraft, and o would normally require major repair or replacement of the affected component, except for engine failure or damage, when the damage is limited to a single engine (including its cowlings or accessories), to propellers, wing tips, antennas, probes, vanes, tyres, brakes, wheels, fairings, panels, landing gear doors, windscreens, the aircraft skin (such as small dents or puncture holes), or for minor damages to main rotor blades, tail rotor blades, landing gear, and those resulting from hail or bird strike (including holes in the radome); or c) the aircraft is missing or is completely inaccessible
Aeroplane	A power-driven heavier-than-air aircraft deriving its lift in flight chiefly from aerodynamic reactions on surfaces remaining fixed under given conditions of flight but does not include a power-assisted sailplane.
Aircraft	Any machine or craft that can derive support in the atmosphere from the reactions of the air, other than the reactions of the air against the earth's surface.
Auxiliary power unit (APU)	A gas-turbine powered unit that provides on-board electrical power and compressed ventilation air, independent of the aircraft propulsion engines.
Crew resource management (CRM)	A team training and operational philosophy with the objective of ensuring the effective use of all available resources to achieve safe and efficient flight operations.
Emergency equipment	Equipment installed or carried for use in abnormal and emergency situations

Term	Definition
	for the safe conduct of the flight and protection of the occupants.
Exposition	For an Australian air transport operator, means: (i) the set of documents approved by CASA under regulation 119.075 in relation to the operator; and (ii) if the set of documents is changed under regulation 119.085, 119.095 or 119.105, or in accordance with the process mentioned in regulation 119.100—the set of documents as changed.
Fatigue	A physiological state of reduced mental or physical performance capability resulting from sleep loss, extended wakefulness, circadian phase, and/or workload (mental and/or physical activity) that can impair a person's alertness and ability to perform safety-related operational duties.
Flight	(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 purpose 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.
Flight crew member	A licenced crew member charged with duties essential to the operation of an aircraft during a flight duty period.
Fumes	Odorous, gaseous compounds which are not visible. Note. — In the context of this advisory circular, fumes and odours are deemed to be synonymous, and the term "fume(s)" includes both fumes and odours.
Hands-on exercise	Exercise on the use of equipment/aircraft systems that is conducted without a specific context. Equipment that is removed from operation, or other representative training equipment considered acceptable by CASA, can be used for the purposes of this training.
Human factors (HF)	The minimisation of human error and its consequences by optimising the relationships within systems between people, activities and equipment.
Hypoxia	A deficiency of oxygen in inspired gases, arterial blood or tissue, short of anoxia (almost complete absence of oxygen).
Incident	An occurrence, other than an accident, with the operation of an aircraft which could affect the safety of operation.
Inflight	The period from the moment all external aircraft doors are closed following boarding through the moment when one external door is opened to allow passengers to leave the aircraft or until, if a forced landing, competent authorities take over responsibility for the aircraft, individuals and property on the aircraft. For the purpose of the Tokyo Convention, an aircraft is

Term	Definition
	considered to be in-flight from the moment when power is applied for the purpose of take-off until the moment when the landing run ends.
Investigation	A process conducted for the purpose of accident prevention which includes the gathering and analysis of information, the drawing of conclusions, including the determination of causes and/or contributing factors and, when appropriate, the making of safety recommendations.
Initial training	Training provided to a person to introduce the operators' processes for carrying out all activities associated with a person's role.
Master minimum equipment list (MMEL)	See regulation 91.925 Master minimum equipment list or MMEL, for a type of aircraft, means the document: (a) that includes a list of items in the aircraft that may (subject to any conditions or limitations specified in the document) be inoperative for a flight of the aircraft; and (b) prepared by the holder of the type certificate for the aircraft; and (c) approved by the national aviation authority that issued the type certificate for the aircraft.
Minimum equipment list (MEL)	A list which provides for the operation of aircraft, subject to specified conditions, with particular equipment inoperative, prepared by an operator in conformity with, or more restrictive than, the master minimum equipment list (MMEL) established for the aircraft type.
Non-technical skills (NTS)	The mental, social, and personal-management abilities that complement the technical skills of workers and contribute to safe and effective performance in complex work systems. They include competencies such as decision-making, workload management, team communication, situation awareness, and stress management.
Occurrence	Any accident or incident associated with the operation of an 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 list	For a flight, means a passenger list for the flight, or other document, stating the information mentioned in subregulation 133.080(2) of CASR.
Passenger with reduced mobility	A person who is likely to require special conditions and assistance to find and use an exit on board an aircraft in an 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.

Term	Definition
Recirculated air	Air from the aircraft passenger cabin that is reused as part of the air supply.
Recurrent training	Training of the personnel of an aircraft operator, or the operator of a flight simulation training device, that is conducted to ensure that the personnel are competent to carry out their responsibilities.
Safety harness	A webbing-based restraint consisting of at least three anchor points restraining both the pelvis and upper torso. (ICAO Doc 10086)
Safety recommendation	A proposal of an accident investigation authority based on information derived from an investigation, made with the intention of preventing accidents or incidents and which in no case has the purpose of creating a presumption of blame or liability for an accident or incident. In addition to safety recommendations arising from accident and incident investigations, safety recommendations may result from diverse sources, including safety studies.
Seatbelt	A webbing-based restraint consisting of two anchor points restraining the pelvis. It is also referred to as a lap belt. (ICAO Doc 10086)
Senior cabin crew member	Cabin crew leader who has overall responsibility for the conduct and coordination of cabin procedures applicable during normal operations and during abnormal and emergency situations for flights operated with more than one cabin crew member. The senior cabin crew member is responsible to the pilot in command for the conduct and coordination of normal and emergency procedures specified in the operations manual including discontinuing non-safety related duties for safety or security purposes.
Serious incident	An incident involving circumstances indicating that there was a high probability of an accident and associated with the operation of an aircraft which, in the case of a manned aircraft, takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, or in the case of an unmanned aircraft, takes place between the time the aircraft is ready to move with the purpose of flight until such time as it comes to rest at the end of the flight and the primary propulsion system is shut down.
Serious injury	An injury which is sustained by a person in an accident and which: a) requires hospitalisation for more than 48 hours, commencing within seven days from the date the injury was received; or b) results in a fracture of any bone (except simple fractures of fingers, toes or nose); or c) involves lacerations which cause severe haemorrhage, nerve, muscle or tendon damage; or d) involves injury to any internal organ; or e) involves second- or third-degree burns, or any burns affecting more than five per cent of the body surface; or f) involves verified exposure to infectious substances or injurious radiation.
Smoke	The product of burning materials made visible by the presence of small particles.
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;

Term	Definition
	b) unaccompanied children; c) persons with disabilities; d) persons with mobility impairments; e) persons on stretchers; and f) inadmissible passengers, deportees or persons in custody.
State	Includes the Northern Territory.
State of design	Has the meaning given by Annex 8 to the Chicago Convention. The State having jurisdiction over the organisation responsible for the type design.
State of manufacturer	The State having jurisdiction over the organisation responsible for the final assembly of the aircraft.
State of occurrence	The state in the territory of which an accident or incident occurs.
State of an operator	The country in which the operator's principal place of business is located or, if the operator does not have a principal place of business, the country in which the operator's permanent residence is located.
State of registry	For a foreign registered aircraft, means the foreign country on whose register the aircraft is entered.
Survivable crash environment	An environment that prevails when the cabin occupants are subjected to crash forces within human tolerance levels, and the structural integrity of the passenger space remains intact such that the occupants can rapidly evacuate an aircraft.
Survivor	A victim who is not fatally injured as a result of an aircraft accident.
Unstaffed exit	Emergency exit for which no cabin crew member has been positioned for the flight.
Victim	An occupant of the aircraft, or any person outside the aircraft, who is unintentionally directly involved in the aircraft accident. Victims may include the crew, revenue passengers, non-revenue passengers and third parties.

4 Recommendations

5 Cabin safety investigation

As per ICAO definitions, accidents and incidents[1] are differentiated by their outcomes. For example, an evacuation in which occupants sustain serious injuries is classified as an accident. An evacuation without injuries or aircraft damage is classified as an incident. However, the lack of a negative outcome (e.g., serious injury) does not mean that lessons cannot be learned from the occurrence.

Cabin safety aspects of any incident should be addressed as part of the investigation process. The goal of a cabin safety investigation is to analyse all aspects of an incident in relation to the actions of cabin crew members and passengers, as well as the cabin environment and relevant systems and equipment on board, in order to identify safety deficiencies and lessons learned. The investigations may result in the development of recommendations related to operator procedures, fatigue (e.g., scheduling practices), training, safety and emergency equipment, and aircraft systems.

The investigation process includes the gathering, recording and analysis of all relevant information. The order in which an investigation report will be compiled, delivered and managed is by:

- preparing for the investigation
- collecting data
- analysing data
- presenting findings and recommendations
- continuously improving performance.
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- Refer Appendix A - Cabin Investigator Tasks for detail relating to each of the above phases of the investigation process.

Procedures for operational investigations conducted should include determining the investigation level. Some occurrences may not require a full investigation report, rather a partial one, i.e., factual investigation with limited analysis.

Information collected and included in an incident report will typically reflect what is incorporated into an accident report. Based on the type and severity of the incident, not all the aspects covered in an accident investigation will be addressed. For example, investigators may review photographs of the incident, taken by the crew, as opposed to travelling to the site of the occurrence.

[1] ICAO Annex 13 – Aircraft Accident and Incident Investigation contains the Standards and Recommended Practices (SARPs) for aircraft accident and incident investigation. Annex 13 defines the sole objective of an aircraft accident or incident investigation as the prevention of future accidents and incidents. It also states that it is not the purpose of an investigation to apportion blame or liability.

This advisory circular concentrates on activities associated with cabin safety incident investigation (as opposed to an accident) and includes investigator protocol as it relates to an unruly passenger and medical event.

6 Cabin safety investigator role

The cabin investigator is responsible for examining and documenting the factors that affect the survival of occupants involved in accidents, incidents and occurrences involving safety violations. In addition to survival factors, the cabin investigator is responsible for determining factors that affect the safety of flight and contribute to an occurrence and its outcomes (e.g., change in an operator policy or procedure which is not supported by training). In the context of an occurrence investigation, these factors are collectively referred to as ‘contributing factors.’

Cabin investigator responsibilities include:

- acting as a cabin safety expert in the aircraft accident or incident investigation with emphasis on cabin interior and emergency equipment design, safety and emergency procedures, cabin safety, occupant protection and related issues
- acting as a resource for investigations into other survival factor issues that may be outside the area of primary expertise
- conducting surveys, special studies and investigations, and developing proposed safety recommendations and testimonies
- documenting, analysing and evaluating survival factors including cabin safety and cabin crew training, occupant protection, airport operations, and airport and community emergency management factors that may arise during an investigation
- determining requirements for special tests, studies and technical assistance that may be necessary in one or more aspects of a given investigation. Directing and monitoring these activities and evaluating their findings in terms of relevancy to contributing factors and occupant survivability
- developing a formal report including significant findings from the investigation in relation to cabin safety and survivability, together with the development of supporting documentation such as photographs, records, charts and diagrams
- ensuring the report is timely and technically correct and accurately reflects the findings
- identifying pertinent safety recommendations and contributing factors liaising with appropriate authorities.

7 Type of occurrences

The decision as to which occurrences should be investigated are typically defined in the operator's established safety risk management processes and consider available resources.

Examples of incidents normally investigated include, but are not limited to:

- cabin baggage incidents;
- cabin damage;
- false alarms (e.g., smoke detection system);
- hard landings;
- inadvertent slide deployments;
- malfunction of aircraft systems or safety and emergency equipment;
- medical events involving a crew member or passenger;
- suspected or confirmed portable electronic device (PED) interference;
- moderate to severe turbulence encounters (regardless of serious injury or damage sustained); and
- unruly passengers.

With the goal of enhancing safety, an operator may wish to share the findings from the investigations of occurrences, such as those listed above, with the regulator, regional and international organisations, original equipment manufacturers or other stakeholders, at its discretion.

8 Incident report and information specific to cabin safety

Information that should be collected and included in an incident report should reflect that which is incorporated into an accident report[2]. Based on the type and severity of the incident, not all the aspects covered in an accident investigation may be addressed. For example, investigators may review photographs of the incident, taken by the crew members, rather than travel to the site of the occurrence to document the cabin.

[2]Information specific to cabin safety should be gathered, analysed and incorporated in an accident report. This information includes a) general information related to the accident flight; b) relevant documentation (from the operator, the State of the Operator and other sources); c) aircraft (cabin specific) information; d) human performance; e) additional information; and f) interviews.

9 Guidance on cabin incident investigation

The following information pertains to guidance on the investigation of cabin safety aspects specific to a medical and unruly passenger event. Not all items listed in the guidance may need to be covered during an investigation. The cabin investigator may use the guidance presented below to ensure that all the relevant items are addressed, however, could choose to omit certain parts based on the nature of the occurrence and the complexity of the investigation.

Medical event

A medical event is an occurrence involving cabin crew members and/or a health professional volunteer and/or ground medical support providing medical assistance/advice and/or first aid to an aircraft occupant, while in-flight or on the ground.

This type of occurrence includes, but is not limited to:

- events that are life-threatening;
- occupants presenting signs and/or symptoms of illness, which required intervention by ground medical support and/or on-board volunteers and/or emergency medical services and/or had an impact on the aircraft operation (e.g., diversion);
- cases of potential communicable disease; and
- death or presumed death on board.
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The investigation of the occurrence should reconstruct the sequence of events while focusing on the following aspects in as much detail as possible:

a) pre-occurrence activities – pre-flight tasks conducted by the cabin crew related to identifying and managing a possible medical event, such as pre-flight briefings and safety and emergency equipment checks;

b) during the occurrence:

1) when the medical event occurred (including time and phase of flight);

2) how/when occupants became aware of the situation;

3) information regarding the passenger or crew member suffering the medical event;

4) what activities were taking place in the cabin at the time (e.g., meal service);

5) actions of flight and cabin crew members;

6) actions of others, including those of ground medical support and/or on-board health professional volunteers;

7) functionality and effectiveness of equipment used by cabin crew or others to assist in the situation;

8) injuries to crew members, passengers or others; and

9) the impact on the operation (e.g., diversion); and

c) post-occurrence actions:

1) flight crew, cabin crew and passenger actions; and

2) subsequent actions by other personnel (e.g., medical services at the airport).

Appendix B to section 6 presents guidance for the aspects that should be analysed when investigating an incident involving a medical event.

Unruly passenger event

An unruly passenger event (also referred to as a disruptive passenger event) is an occurrence where a passenger(s) fails to respect the rules of conduct or to follow the instructions of crew members and thereby disturbs the good order and discipline on board the aircraft. This involves various types of offences, violations of regulations, and reprehensible acts, including:

assault on crew members or passengers;

disruptive/inappropriate behaviour linked to alcohol consumption;

fights among passengers;

child molestation, sexual harassment and assault;

illegal consumption of drugs on board;

refusal to stop smoking or consuming alcohol (including cases where passenger consumes own alcohol);

vandalizing of aircraft seats and cabin interior;

unauthorized use of portable electronic devices (PEDs);

tampering with, theft and/or destruction of safety and emergency equipment on board; and other disorderly or riotous conduct.

The investigation of this occurrence should reconstruct the sequence of events while focusing on the following aspects, in as much detail as possible:

a) pre-occurrence activities:

1) pre-flight tasks conducted by the cabin crew related to preventing a possible unruly passenger event from occurring, such as pre-flight briefings and monitoring cabin for security-related issues; and

2) unruly passenger's pre-boarding/post-boarding/in-flight activities – surrounding circumstances that affected the unruly passenger(s), such as flight delays, gate changes, missed connections, etc.;

b) during the occurrence:

1) when the unruly passenger event occurred (including time and phase of flight);

2) how/when occupants became aware of the situation;

3) what activities were taking place in the cabin at the time (e.g., boarding, meal service);

4) actions by cabin crew members, including actions taken if the passenger could not be handled/managed/restrained;

5) actions by others, including those of other passengers or law enforcement personnel on board;

6) functionality and effectiveness of equipment used by cabin crew or others to assist in the situation (e.g., plastic flexicuffs);

7) injuries to crew members, passengers or others;

8) damage sustained by the aircraft/in the cabin which affected the operation; and

9) impact on the operation (e.g., diversion); and

c) post-occurrence actions:

1) flight crew, cabin crew and passenger actions; and

2) subsequent actions by other personnel (e.g., law enforcement personnel at the airport).

Appendix C to section 6 presents guidance for the aspects that should be analysed when investigating an incident involving an unruly passenger.

10 Guidance on conducting cabin crew member and passenger interviews

Interviewing witnesses assists the cabin investigator with the following:

a) gaining an understanding of what occurred

b) developing recommendations related to operator procedures, fatigue management (e.g., scheduling practices), training, safety and emergency equipment, aircraft systems; and

c) confirming, clarifying or supplementing information obtained from other sources.

The aim of these interviews is not to apportion blame; it is to enhance cabin safety and survivability.

Objectives of the interview include:

a) learning what happened to the person(s) being interviewed

b) gathering information regarding the event sequence; and

c) learning about the actions of the crew members and passengers involved in the occurrence.

An investigator typically affords everyone the opportunity to describe in their own words, without interruption or coercion, an account of what occurred. Following the interview, an investigator may ask follow-up questions to determine additional information, as required. An aircraft diagram (with seat rows, exits, galleys, and lavatories) is a useful tool to orient a person during an interview.

11 Cabin crew member interview

Cabin crew should be interviewed as soon as possible after the occurrence. They should also provide a written statement to the cabin investigator. Crew members may be reinterviewed at a later date, if necessary.

It is important that cabin crew be provided with an environment conducive conveying information freely and without coercion. The cabin crew member interview should address the following:

general information

Name, business address, business email and business phone number

Gender, age, height and weight

Operational experience on the accident/incident aircraft model

Experience as a cabin crew member (in years) with current operator and previous operators

Work category: cabin crew member, senior cabin crew member, etc.

Number of different aircraft models and series that the cabin crew member is qualified on

Any other special qualifications or roles (e.g., cabin crew instructor)

Any previous accident/incident investigation experience

Nationalities of the crew members and working language amongst the crew, including mother tongue of the individual crew members

Medical history and medication taken at the time of the occurrence

Current medical condition and medication taken at time of the interview

Flight and duty schedule for the 7-day period preceding the occurrence

Sleep/wake cycle for the 7-day period preceding the occurrence

Food and beverages consumed during the 24-hour period preceding the occurrence

Commute time to airport, mode of travel and time at base before check-in

Conditions during the commute

Were you injured as a result of the occurrence? Describe your injuries. When and how were you injured? Have you received medical attention?

pre-flight/in-flight activities

Describe the pre-flight cabin crew briefing. What was included, were all crew members present, who conducted the briefing, where was the briefing conducted, where there any difficulties in understanding the briefing?

Describe any briefing conducted by the pilot-in-command (PIC). If the PIC briefing was with the senior cabin crew member only, was the information conveyed to the rest of the cabin crew?

Were all cabin crew made aware of any unserviceable cabin system(s) at the commencement of, or during the flight? Was that information relayed to the entire crew?

Were pre-flight safety and security checks conducted? If so, was a checklist or the operations manual used? Were any abnormalities found?

Describe observations of, or interaction with, passenger agents, aircraft maintenance technicians, ground service personnel, in-bound crew members, other cabin crew, and/or flight crew that may be pertinent to the investigation.

Describe the location of special categories of passengers, including passengers with disabilities.

Describe the location of infants and how they were restrained.

Describe the location and use of child restraint systems, if any.

Describe the passenger safety briefing. Was it a video or a 'live' briefing? Was there any issue during the briefing? Were passengers attentive to the briefing? Were they able to understand the briefing?

Describe any briefing provided to emergency exit row passengers. Were passengers attentive to the briefing?

Were the passengers willing and qualified to sit in an emergency exit row? Was there a need to relocate anyone?

Describe the briefing given to special categories of passengers. Was the passenger attentive to the briefing?

Describe the amount and stowage of carry-on baggage. Were you able to accommodate all of the baggage that came on board in an approved stowage location?

Describe your pre-departure cabin activities. Was the workload appropriate for the numbers of crew members in the cabin?

Was alcohol served before/during the flight? If yes, was there anyone who appeared to be intoxicated/impaired?

Did you hear the command to arm your emergency exit(s) for departure? Did you arm your own exit? Was your exit armed in accordance with the operator's procedures?

Describe your final cabin safety checks. Were the passengers compliant?

What was your emergency station for take-off and landing and was it in the same cabin as your workstation?

Were you seated for take-off and landing? If not, why not?

Where were you seated for take-off and landing? Please describe your seat (e.g., cabin crew seat/jump seat, passenger seat, single or double crew station, forward or aft-facing seat)

Describe the type of seat restraint system used at your cabin crew seat. How did you secure it? Was it effective?

occurrence information

Describe how you became aware or were informed of the problem. If briefed by the PIC, what information was provided? If briefed by another crew member, what information were you given?

Describe your location during the occurrence and what you were doing.

Describe if and how the passengers were informed of the problem and what was their reaction.

Describe the pre-occurrence preparations, i.e., type of warning, cabin preparation.

Were the passengers attentive or were there any distractions?

Did you use any able-bodied passengers (ABPs) Explain?

Describe the occurrence.

training

Describe your initial and recurrent safety and emergency procedures training. Was it computer based or in a classroom? How much time was provided for practical training?

Where and when were your initial and recurrent safety and emergency procedures training conducted?

When was your last simulated exercise of an aircraft evacuation? Describe the simulated exercise. How often is the simulated exercise conducted?

Describe your firefighting training.

Describe your initial and recurrent ditching training.

Did you participate in a wet drill for water survival? Describe the exercise. Do operator policies require you to know how to swim?

Describe your practical training with respect to the use of safety and emergency equipment. Are the training devices representative of the actual equipment found on board the aircraft in the fleet?

Describe your first-aid training or any other pertinent training.

Did you participate in HF/NTS training with flight crew members or other staff from your airline? Explain.

Do you feel that your training was realistic? Explain e.g., emergency equipment, simulated exercises.

Did your training prepare you for what happened? Explain.

Did you feel confident in your abilities based on your training? Explain.

e) information specific to the type of occurrence (e.g., unruly passenger); and

f) any additional comments that the cabin crew member may wish to make, such as further information that he/she thinks may assist in the investigation.

Questions at the end of the interview

Based on your experience, can you suggest any improvements to procedures, training or equipment

Do you have any further information that you think may assist in the investigation of this occurrence?

12 Passenger interviews

It is important that the cabin investigator interviews passengers as soon as possible post the event to ensure the most accurate recall. They may be re-interviewed at a later date, if deemed necessary. Questionnaires may be developed and sent to passengers, as a means of gathering information remotely.

The passenger interview should address the following points:

personal data

Name, gender, age, height and weight

Address

Phone number

Email

Occupation

Seat number and location

Travelling alone or with relatives, friends, business associates, etc.

Special categories of passengers e.g., infants, persons with reduced mobility etc.

Any disability that could impair egress from the aircraft

Aviation experience

Any additional skills that were used during the occurrence

Languages spoken

Were you injured? Describe your injuries. When and how were you injured?

Did you receive medical attention?

pre-flight preparations

Describe the weight, size and stowage location of your carry-on baggage

Describe the clothing and footwear that you were wearing

Was there a pre-flight safety briefing? How was it provided i.e., pilot, cabin crew member, video or other means? What information do you recall? Did you understand the safety briefing? Was it helpful?

Did you read the passenger safety briefing card? Did you understand the information on the passenger safety briefing card? What information do you recall?

Did you note the locations of more than one exit near your seat?

Were you seated adjacent to an emergency exit?

Were you briefed prior to departure on the operation of the emergency exit? If yes, by whom?

Describe any observations of maintenance, ground service personnel e.g., de-icing the aircraft, or flight crew that might be pertinent to the investigation.

occurrence information

How and when did you first become aware of a problem? Where were you when you fire became aware of a problem?

How did the crew prepare you for the emergency? Were you given instructions over the PA system? By an individual crew member? Shouted instructions?

Did you hear any shouted commands? If yes, what did you hear? Did the information help you?

Did you brace for impact? Describe your brace position.

Were you travelling with infants or other special categories of passenger? How were they restrained? Were there any problems?

How tightly was your seat belt fastened? Did you have any problems released your seat belt? If yes, describe.

Did you remove your shoes? Why? If you did not remove them, did they stay on during the impact and evacuation?

Describe the impact sequence. What happened to your during the impact sequence?

Did anything happen to your seat during impact?

Did you remain seated until the aircraft stopped?

Did you encounter any difficulties? Explain.

information specific to the type of occurrence; and

In order to provide an illustration of questions that can be tailored to the event type, here are examples specific to turbulence and fire/smoke/fumes:

Turbulence

Describe any information you received regarding potential weather en route. Was it communicated to the entire crew?
What are your operator's procedures in the event of anticipated and unanticipated turbulence encounters? Describe your operator's procedures for communication among crew members (or established advisory signal) and with passengers in the event of anticipated and unanticipated turbulence. Were you able to apply them and were they effective?
Describe the crew communication procedure used in this occurrence. Was it in accordance with your operator's procedures?
Were you warned before you experienced the turbulence encounter? How?
Was the seat belt sign illuminated? If yes, for how long?
Were passengers seated when the seat belt sign was illuminated?
Were passengers properly restrained, including infants?
Were there any unrestrained personal items and did they cause a problem (e.g., portable electronic devices, cabin baggage, service items)?
Were you seated at your assigned cabin crew seat? If so, were you properly restrained?
If you were not in your assigned cabin crew seat, where were you? Were you able to properly restrain yourself?
Where were you when the turbulence occurred? Describe what actions were taken.

What announcements were made regarding turbulence? Were passengers instructed to remain seated? When were the announcements made? Were any shouted commands used?
Were there any carts or other service equipment in the cabin at the time of the turbulence encounter?
Describe what you did with the service equipment during or after the turbulence encounter.
Were you injured? Describe your injuries.
Were you able to assist others following the turbulence encounter?
Describe injuries that you observed in other crew members or passengers. Did you administer first aid?
Describe the condition of the cabin and the galleys after the occurrence.
Does your operator have post-turbulence procedures and, if so, did you use them? Explain.

Fire, smoke and/or fumes

When and how did you become aware of fire, smoke and/or fumes?

Where did you first observe fire, smoke and/or fumes? Describe what you saw and/or smelled (colour, density and odour).

Where were you when you first became aware of fire, smoke and/or fumes?

What role did you play, if any, during the firefighting?

Did the conditions (e.g., amount/density of smoke) increase, decrease or change during the occurrence?

Did you have difficulty breathing? Did you use protective breathing equipment (PBE) or other protection?

Did you have problems communicating with other crew members or passengers? If yes, describe the problems.

Describe any communication with the flight crew.

Which firefighting equipment did you use, if any? Describe the actions taken to fight the fire.

Describe any actions taken to assist the passengers (e.g., distribution of wet cloths, relocation of passengers, relocation of equipment such as oxygen bottles, which may fuel the fire).

Did any passengers or crew require first aid?

Did you receive training on fighting a lithium-battery fire? Was it effective? Explain.

Did any passengers assist in the firefighting? Explain

any additional comments that the passenger may wish to make, such as further information that he/she thinks may assist in the investigation.

Based on your experience, can you suggest any improvements to passenger briefings, procedures, cabin crew training or equipment?

Do you have any further information that you think may assistance in the investigation of this occurrence?

13 Conducting other interviews

Systems failures may require interviews with maintenance and ground service personnel.

The investigator may also consider interviewing off-duty flight crew members, supervisory personnel, instructors, firefighting personnel, witnesses, next of kin, etc., to gather any additional information needed.

14 Cabin safety incident analysis

Material to assist investigators with information analysis when constructing a report following an occurrence is detailed in this section and falls under the headings:

- a) general information
- b) operator documentation
- c) documentation from the regulatory body
- d) documentation from other sources
- e) aircraft - cabin specific
- f) human performance - cabin crew
- g) human performance - passengers.

Further information relating to these elements can be found in Appendices B and C of this document.

Human performance

As part of the analysis, the cabin investigator should evaluate how cabin crew members performed during the occurrence. The human performance analysis focuses on significant factors, which may be categorised as follows:

operational factors, including aspects such as: cabin crew member's knowledge of systems and equipment, their experience level and proficiency, crew compatibility, supervision/command and control relationships, operational pressure, etc.;

organizational factors, including aspects such as: crew selection, aircraft qualifications (how many aircraft model qualifications a cabin crew member may hold at one time), training, operator procedures and processes (including scheduling and reporting of fatigue risk), etc.;

task-related factors, including aspects such as: task components (number, duration, etc.), workload tempo/saturation, judgement and decision-making, situational awareness, distractions, etc.; and

system and equipment factors, including aspects such as: design and location of equipment, lighting, inadvertent operation, confusion of controls/switches, suitability of cabin crew clothing, etc.

The analysis should also evaluate how passengers performed during the occurrence. The cabin investigator will typically focus on:

passengers' actions and responses during pre-flight activities (e.g., listening to safety briefings, reading the safety briefing card);

passengers' behaviour and reactions during the occurrence (e.g., their understanding of crew member instructions during an emergency, difficulties experienced, assisting crew in opening exits, etc.); and

post-accident actions, including responses to instructions from personnel such as rescue, and firefighting (RFF) and actions taken to increase survivability (e.g., seeking assistance or helping other survivors).

Information regarding human performance is usually gathered from interviews with crew members, passengers or other witnesses. During the interview process, the cabin investigator would attempt to confirm what actions and conditions the crew members and passengers were experiencing during the occurrence.

In fatal accidents, autopsies and reconstruction of crew actions from cockpit voice recordings and air traffic control tapes may provide indicators to flight and cabin crew actions.

15 Final report structure

Following the completion of an investigation, a final report will be structured in accordance with Annex 13 provisions. The body therefore will include the headings:

a) factual information record

b) analysis of the relevant facts

c) conclusion in the form of findings, causes and/or contributing factors; and

d) safety recommendations.

Note. - Detailed guidance on completing each section of the final report can be found in the Manual of Aircraft and Accident and Incident Investigation (Doc 9756), Part IV - Reporting.

The final report includes conclusions, and when appropriate, safety recommendations issued by the investigator conducting the investigation of the incident. Conclusions and safety recommendations must not be used for apportioning blame or liability.

The cabin investigator should anticipate that other stakeholders will scrutinise and challenge the report's content during the investigation process. The following may assist the cabin investigator in presenting a robust report:

revise the report to find any omissions/inaccuracies prior to any peer review

read the document from the perspective of an uninformed, but interested, reader i.e., are there any gaps in the reasoning, issues not dealt with or extraneous information; and

acknowledge and respond to inconsistent facts or opposing points of view (if applicable).

The cabin investigator's analysis should provide the following, which may be presented in bullet point form:

what safety issues can be ruled out based on the cabin investigator's work on this investigation? This may involve multiple issues

what safety issues were discovered as a result of the cabin investigator's part of the investigation? This may involve multiple issues

identify specifically why each issue is deemed a safety concern, giving as many details as possible. The cabin investigator should repeat this step for every identified safety issue, as follows:

identify the root cause/contributing factors for the issue

provide any other factual support for the issue

propose a conclusion that states why the identified issue is a safety concern

indicate whether preventive actions have been taken or are planned to resolve this issue

state whether any recommendation(s) is/are needed in this area. If not, state why; if so, provide proposed wording for the recommendation(s), including the agency or organisation to which the recommendation(s) would be addressed.

16 Conclusions

Conclusions are a list of findings, causes and/or contributing factors established in the investigation.

The list of causes and/or contributing factors should include both immediate and deeper systemic causes and/or contributing factors.

Conclusions should be written as objective, factual statements. They should be free form subjective comments.

17 Safety recommendations

As appropriate, the final report should state any recommendations made for the purpose of incident prevent and identify safety actions already implemented. These are suggestions or proposals as to the best course of action to address identified deficiencies.

Safety recommendations should be clear, concise and action oriented.

Safety recommendations may be addressed to one or more of the following entities:

state authority e.g., the Civil Aviation Safety Authority

operator (involved in the occurrence or to operators in general)

equipment manufacturer e.g., airframe, components, etc.

aerodrome or other service provider; and

other specific stakeholders e.g., industry group, firefighting, medical services.

18 Reference material

Regulations

Document	Title
Subpart 119.E	Training and checking for operational safety critical personnel
Subpart 121.P	Cabin crew
Part 121 MOS Chapter 13	Cabin crew training and checking

International Civil Aviation Organisation

Document	Title
Annex 13	Aircraft accident and incident investigation
Circular 298-AN/172	Training guidelines for aircraft accident investigators [2003]
Circular 315-AN/179	Hazards at aircraft accident sites [2008]
Circular 344-AN/202	Guidelines on Education, Training and Reporting Practices related to Fume Events [2015]
Document 10002	Cabin Crew Safety Training Manual [2020]
Document 10062	Manual on the Investigation of Cabin Safety Aspects in Accidents and Incidents [2021]
Document 10158	Manual on Safety Management in Cabin Operations [2021]

Advisory material

Document	Title
AC 121-04	Passenger safety information
AMC/GM Part 121	Acceptable means of compliance and guidance material - Australian air transport operations-larger aeroplanes
Cabin safety bulletin 14	Cabin safety incident investigation
Cabin safety bulletin 15	Cabin safety incident analysis

Other advisory material

Document	Title
EASA	Safety Information Bulletin (EASA SIB No: 2009-33)
IATA	Cabin Operations Safety Best Practices Guide [2020]
ISASI	Cabin Safety Investigation Guidelines (www.icao.int/cabinsafety)

19 Enquiries and more information

- View the cabin safety page.
- Contact us from Monday to Friday 8:30am to 5:00pm (AEDST), excluding national public holidays. Use +61 2 6217 1449 if overseas or contact CASA online.
- Subscribe to the 'Cabin Safety Bulletins' mailing list.

20 Appendix A – Cabin Investigator Tasks

Prepare for the investigation	
The investigator should be prepared to conduct a thorough investigation.	
Task	Sub-task
1.1 Conduct departure preparations	1.1.1 Gather launch information.
	1.1.2 Verify that the necessary documents are available and valid.
	1.1.3 Verify that the required clothing is available and suitable for the physical environment.
	1.1.4 Verify that all required inoculations and vaccinations are valid.
	1.1.5 Verify that the investigation field kit is available, accessible and functional.
	1.1.6 Verify that the necessary funds for the mission are available.
	1.1.7 Follow a quick reference checklist, if applicable.

1.2 Gather documentation	1.2.1 Establish a method of data collection.
	1.2.2 Collect relevant operator records.
	1.2.3 Collect relevant operator documentation.
	1.2.4 Collect documentation relevant to the occurrence.
	1.2.5 Collect other relevant documentation.

Collect data	
The investigator should gather all the necessary data to enable him/her to analyse the occurrence.	
Task	**Sub-task**
2.1 Protect self while on site	2.1.1 Use appropriate protective equipment, as required.
	2.1.2 Follow the exposure control plan, as required.
	2.1.3 Identify hazards and manage associated risks.

	2.1.4 Communicate any concerns regarding the investigation site to the investigator-in-charge.
	2.1.5 Clean and decontaminate equipment and materials, as appropriate.
	2.1.6 Apply procedures for the containment and disposal of regulated waste.
	2.1.7 Apply procedures for exposure incident, as required.
	2.1.8 Apply procedures for critical incident stress response, if needed.
2.2 Document the cabin	2.2.1 Establish methods of evidence documentation.
	2.2.2 Examine evidence of damage, malfunctions and failures.
	2.2.3 Examine evidence of utilisation of systems and equipment in the cabin.
	2.2.4 Inspect items and document with photographs, aircraft layout diagrams and notes.
	2.2.5 Record findings/wreckage, as per established procedures.

2.3 Conduct the interview	2.3.1 Gather and review the information related to events prior to, during, and following the occurrence.
	2.3.2 Set a clear objective for the interview.
	2.3.3 Determine a series of basic questions.
	2.3.4 Coordinate the roles of other investigators in the interview, if applicable.
	2.3.5 Verify that all required documentation and equipment are available.
	2.3.6 Apply interview protocol.
	2.3.7 Obtain permission from the hospital, if applicable.
	2.3.8 State clear objectives and clarify roles for the investigation being undertaken.
	2.3.9 Establish and maintain an atmosphere of open communication and mutual respect.
	2.3.10 Recognize and be flexible and supportive to the interviewee's needs.

	2.3.11 Demonstrate effective facilitation.
	2.3.12 Document information in an accurate, complete and detailed manner.
	2.3.13 Manage time.
	2.3.14 Prepare and facilitate the distribution of passenger questionnaires, to gather information remotely.

Analyse data	
The investigator should analyse the data collected to determine the factors affecting the safety of flight and survival of persons involved in the occurrence, including the causes of injuries sustained by occupants of the aircraft involved (or by other affected persons) and damage sustained by the aircraft, as well as examine operator procedures, search and rescue, crashworthiness, equipment design, emergency response and escape, and training.	
Task	**Sub-task**
3.1 Conduct analysis	3.1.1 Establish a method for data entry, reporting and analysis.
	3.1.2 Conduct a preliminary analysis.
	3.1.3 Compare performance to defined regulations, standards and procedures.
	3.1.4 Conduct an in-depth analysis.
	3.1.5 Make a decision on the results of the analysis (i.e. determine/identify contributing factors).
	3.1.6 Verify that analysis techniques are sufficient, valid and reliable.
	3.1.7 Develop findings.

	3.1.8 Develop recommendations.
	3.1.9 Maintain confidentiality of the investigation.

Present findings and recommendations	
The investigator should verify that findings are communicated appropriately, to meet the needs of the investigation.	
Task	Sub-task
4.1 Produce a report on the findings and recommendations	4.1.1 Gather all the relevant information on the findings and recommendations.
	4.1.2 Prepare a written report.
	4.1.3 Communicate the findings and recommendations to relevant stakeholders, as per established procedures.

21 Appendix B – Guidance for investigating a medical event

General information

Type of information	Specific information	Objective of the analysis
Flight information	Obtain the following information pertaining to the occurrence: a) Date of occurrence (UTC and LMT) b) Time of occurrence (UTC and LMT) c) Operator name d) Flight number e) Aircraft manufacturer's serial number (MSN), make/model/series, registration and date entered into service f) General location g) Departure point h) Phase of flight and flight level i) Destination and intermediate stops (with ETAs and ETDs), and radar tracks j) Diversion location, if applicable k) Total number of crew members:	

	1) Flight crew 2) Cabin crew l) Total number of additional personnel assigned non-safety and emergency duties in the cabin by the operator; and m) Total number of passengers, including lap held infants and other special categories of passengers	
Passenger/Crew member information	Obtain the following information from the passenger or crew member suffering the medical event: a) name b) age c) height d) weight e) gender f) nationality g) seat location h) travel companions, if applicable i) known medical conditions j) any medication (prescribed or not) k) events prior to the flight/medical event	The objective is to provide factual information about the passenger or crew member suffering the medical event and to evaluate the following: a) any known medical conditions (e.g., diabetes, heart condition, condition requiring a stretcher) b) any known disabilities c) any known medication; and d) any information given by ground crew to the flight/cabin crew regarding the passenger

	l) medical evaluation; and m) other information	
Meteorological conditions	Review the meteorological conditions, which may include: a) atmospheric conditions; and b) cabin altitude	The objective is to review the meteorological conditions and to evaluate if/how they played a role in the occurrence. For example: if cabin altitude contributed to the passenger feeling unwell.

Operator documentation

Type of information	Specific information	Objective of the analysis
Policies and procedures	Review the operations manual and determine pertinent references to: a) pre-flight checks b) crew and passenger briefings c) the sae use of safety and emergency equipment d) the management of on-board medical events; and e) flight and cabin crew member incapacitation, including those specific to single cabin crew member operations, if applicable	The objective is to review the operator's policies and procedures and to evaluate the content and adequacy of the following: a) pre-flight checks of safety and emergency equipment b) briefings for both crew and passengers, including flight crew to cabin crew briefing, cabin crew briefing, safety demonstration, briefings at exits and for special categories of passengers c) procedures for the safe use of safety and emergency equipment (e.g., AED, portable oxygen, medical kits) d) procedures for the management of on-board medical events, focusing on: 1) recognising, prioritising and responding to injured occupants 2) administering first aid 3) communication procedures 4) procedures for seeking ground-based medical assistance and/or voluntary assistance from an on-board health professional 5) use of first aid and safety and emergency equipment, as appropriate 6) managing the voluntary assistance from, and providing support to, an on-board health professional, if available 7) operator policy on 'do not resuscitate, if available 8) managing a death or presumed death on board

		e) procedures in the event of flight crew member incapacitation, focusing on: 1) responding to call from the flight crew 2) moving the incapacitated flight crew member away from the controls 3) securing the incapacitated flight crew member 4) administering first aid 5) assisting the remaining flight crew member (pilot-in-command), as instructed f) procedures in the event of cabin crew member incapacitation, focusing on: 1) administering first aid 2) securing the incapacitated cabin crew member 3) informing the flight crew 4) reassigning required cabin crew stations and duties, if applicable; and g) procedures in the event of single cabin crew member operation incapacitation, focusing on: 1) notifying the flight crew 2) securing the incapacitated cabin crew member 3) administering first aid 4) assigning an able-bodied passenger (ABP) to care for the cabin crew member and/or passenger
Training programmes	Review the approved cabin crew safety training programmes (e.g., initial and	The objective is to review the operator's training programmes (e.g., initial and recurrent) and to evaluate the content and adequacy of the following: a) training content and crew assessment methods, focusing on:

recurrent) and determine pertinent references to:

a) training content regarding the safe use of safety and emergency equipment

b) training content regarding the management of on-board medical events

c) training content regarding crew member incapacitation

d) human performance training, including HF/NTS training and joint flight/cabin crew HF/NTS training

e) aircraft type specific training (for the aircraft model involved in the occurrence)

f) training specific to safety and emergency equipment; and

g) training facilities and devices

Note. - if applicable, review training for other personnel assigned non-safety and emergency duties in the cabin by the operator (e.g., translators)

1) briefings for both crew and passengers including flight crew to cabin crew briefing, cabin crew briefing, safety demonstration, briefings at exits and for special categories of passengers

2) the safe use of safety and emergency equipment

3) first aid and responding to on-board medical events

4) flight and cabin crew member incapacitation

5) hands-on exercise on the operation of the flight deck seat, harness and flight deck oxygen system with a representative training device

6) hands-on exercise on demonstrating CPR

7) hands-on and simulated exercises on relevant safety and emergency equipment and aircraft systems, such as first-aid kit and PA system (specific to the aircraft model involved in the occurrence)

8) simulated exercise on responding to an in-flight medical event

9) simulated exercise of an incapacitated cabin crew member

10) human performance, including joint HF/NTS sessions with flight crew members; and

b) training facilities, focusing on the availability and suitability of:

1) classroom facilities

2) safety and emergency equipment used for training

3) cabin training devices; and

4) trainee-to-instructor ratios

Note - If the operator employees personnel assigned non-safety and emergency duties in the cabin, the training programme content and staffing

		practices should be reviewed to assess if this personnel's activities contributed to or hindered the management of the occurrence.
Records	Review operator records and determine pertinent references to: a) cabin crew members: 1) licence or certification, if applicable 2) training records (including initial, date of last recurrent and line check) 3) aircraft type qualifications, including how many at any one time 4) roster/schedule 5) personnel files (including date of engagement) 6) any other relevant experience b) other personnel records, if applicable; and c) occurrence aircraft: 1) aircraft journey log 2) cabin defect logbook 3) cabin interior configuration diagram (LOPA/s) 4) crew list and crew assignment 5) departure report, if applicable	The objective is to review the operator's records related to the operating crew and aircraft involved in the occurrence and to evaluate the following: a) cabin crew members: 1) the cabin crew members' qualifications and competencies to perform the required duties and responsibilities in the medical situation, including any language qualifications relevant to dealing with the medical event 2) the validity of the qualifications/competencies (e.g., based on the last date the crew members successfully completed required training) 3) the factors that may affect their performance in a positive or negative manner, such as experience (based on date of engagement or previous flying experience with another operator) b) aircraft: 1) the layout of the cabin and galley(s), which can affect where the passenger/crew member was moved and positioned during CPR, for example 2) the location of passengers and crew in the cabin 3) the technical malfunctions that may be traced through maintenance- or cabin-defect logs; and 4) MELs for inoperative items such as cabin crew seats, PA system, aircraft and emergency equipment and systems

	6) diagram of applicable areas, such as galley(s) Dispatch log 8) flight crew log 9) flight deck logbook 10) maintenance logs/release forms 11) MEL 12) other crew documents (e.g., equipment checklists, crew briefing sheets): and 13) passenger manifest and seat chart (including addresses and telephone numbers)	
Other	Review other operator documentation and determine pertinent references to: a) cbain crew recruitment criteria b) operator bulletins and notices to cabin crew c) aircraft maintenance manual; and d) occurrence reports filed by the crew members	The objective is to review the operator's documentation and to evaluate the content and adequacy of the following: a) minimum qualifications required for recruitment of new cabin crew members b) the safety information transmitted to cabin crew members, via internal operator communications (e.g., bulletins) which is required for them to carry out duties and responsibilities, as per operator policies and procedures (e.g., update of procedures); and c) the cabin-related information from the aircraft maintenance manual: communication systems (PA/interphone)

Medical records	Review medical records and determine pertinent references to: a) crew report (first aid) b) technical logbook report; and d) ground service provider reports	The objective is to provide factual information regarding the occurrence: Review all available documentation from crew and other personnel (e.g., doctor, ground crew, etc.) and gather information
Other sources of information	Collect and review any visual, audio, or other 'recorded' information from multiple sources: a) airport cameras b) portable electronic devices (PEDs) c) news media reports; and d) social media	The objective is to gather any information available to assist with the investigation
Information from other parties	Review the documentation of the aerodrome where the occurrence took place (if applicable) and determine pertinent references to: Other parties involved in the occurrence	The objective is to review the following reports, if applicable: Emergency medical services involvement/onsite medical care

Aircraft (cabin specific)

Type of information	Specific information	Objective of the analysis
Aircraft/cabin systems	Record the presence, condition (failed or damaged, serviceable and/or worked normally) and part/serial number of the following systems, as applicable: Communication systems and associated signalling panels	The objective is to evaluate if the systems were useful in managing the occurrence or increasing the survivability of occupants. The analysis should determine if systems worked as intended and, if not, determine the reason: a) the use of PA/interphone to communicate with passengers and crew; and b) signalling panels, including associated chimes
Safety and emergency equipment	Record the presence, condition (failed or damaged or serviceable and/or worked normally) and part/serial number of the following equipment, as applicable: a) portable oxygen equipment b) AED and associated equipment (CPR masks, shields, resuscitator bags, etc.) c) FAK d) universal precaution kit e) medical kit; and	The objective is to evaluate the type of equipment that was available and to assess if it was useful in managing the occurrence or increasing the survivability of occupants. The analysis should determine if: A) the required equipment was available, accessible and functional b) instructions on how to use equipment were effective; and c) additional equipment, not found on board, would have been helpful

	f) any additional equipment used, if applicable	
Condition of the cabin	Record the condition of the cbain, as it relates to the medical event: Conditions related to cabin environment	The objective is to evaluate the reason for the medical event, if applicable, and how cabin conditions may have impacted or contributed to the occurrence

Human performance (cabin crew)

Type of information	Specific information	Objective of the analysis
Pre-occurrence actions	Review the information on cabin crew performance in pre-flight and in-flight activities: a) conducting or participating in crew briefings (including joint briefings, if applicable) b) conducting passenger briefings, to be updated on passengers with special medical needs c) disseminating information between ground, flight and cabin crew d) HF/NTS among the cabin crew and with flight crew e) conducting cabin checks; and f) applying procedures for the safe use of safety and emergency equipment	The objective is to evaluate how the cabin crew performed pre-flight and in-flight duties and responsibilities. The analysis should determine: a) if the crew members participated in a pre-flight briefing, and if so, what was the content, including information regarding passengers with special medical needs b) what safety information was given to passengers prior to departure (e.g., briefings on portable oxygen concentrators), as well as throughout the flight c) how the cbain crew members obtained information regarding passengers with special medical needs (if any), including: content/completeness of information given by flight crew members, senior crew member or ground crew members) d) cabin crew actions in response to the information received e) how HF/NTS aspects were managed (communication, cooperation, coordination), including how tasks were assigned to cabin crew members and how they managed the workload and time constraints. This should include both positive and negative HF/NTS aspects (e.g., miscommunications, delays in relaying information) f) if the crew members secured, prepared and checked the cabin, galley(s) and other areas to prevent/minimise injuries g) if cabin crew members were present in the cbain (i.e., cabin walk through); and

		h) if procedures for the safe use of safety and emergency equipment were applied. If not, what did the cabin crew members do to rectify the situation?
Actions during the occurrence	Review the information on cabin crew performance during the occurrence: a) cabin activities at the time of the medical event b) initiating/reacting to crew communication/signals c) operating systems and equipment d)providing instructions to passengers e) managing passengers f) HF/NTS among the cabin crew and with flight crew; and g) difficulties encountered during the occurrence	The objective is to evaluate how the cabin crew managed the occurrence. The analysis should determine: a) activities being undertaken in the cabin at the time of the medical event b) how cabin crew obtained the information about the medical event (e.g., from passenger and/or crew) c) if/how cabin crew obtained information regarding the person's symptoms d) if they applied procedures for managing on-board medical events, such as administering first aid to injured passengers and/or seeking voluntary medical assistance from an onboard health professional or ground medical support. The analysis should also look at actions taken by the flight crew in relation to the medical event e) if they experienced difficulties communicating with ground medical support, the analysis should focus on the possible reasons f) if the cabin crew had any difficulty operating systems or equipment (e.g., PA, AED), the analysis should focus on the possible reasons g) how cabin crew managed passengers (e.g., those who did not comply with instructions) h) how HF/NTS aspects were managed (communication, cooperation, coordination), including how tasks were assigned to crew members and how they managed the workload and time constraints. This should include both positive and negative HF/NTS aspects (e.g., difficulties in understanding instructions, high workload positions versus low/shared workload positions)

		i) if instructions were given to passengers, and by whom j) the language(s) used to communicate with passengers - any language barrier issues amongst the passengers, crew, and medical personnel should be noted (e.g., passengers and crew did not speak the same language) and k) the impact of the number of cabin crew members on board, with regards to the actions taken
Post - occurrence actions	Review the information on cabin crew performance in managing the situation after the occurrence: a) performing post-even duties b) applying crew member incapacitation procedures c) performing landing duties, if a diversion is necessary; and d) completing applicable documentation	The objective is to evaluate how the cabin crew managed the post-medical event situation, until such time as the aircraft reached its next destination or emergency medical services on ground attended to occupants. The analysis should determine: a) if cabin crew performed post-medical event duties, such as contacting the flight crew b) if cabin crew applied crew member incapacitation procedures (including those specific to single cabin crew member operations). The analysis should focus on actions taken to respond to incapacitated crew members who could not continue their duties (e.g., reassigning cabin crew stations so that all exits are staffed for landing) c) if cabin crew had any difficulty operating systems or equipment (e.g., portable oxygen, FAK, AED, etc.), the analysis should focus on the possible reasons; and d) if cabin crew applied the procedures for completing the applicable documentation, such as an incident report form

Additional information

Type of information	Specific information	Objective of the analysis
Post-occurrence information	Review the information to assess the following activities, if applicable: medical assistance upon arrival.	The objective is to evaluate how the operator/aerodrome/medical personnel responded to and managed the situation once the aircraft landed. The analysis should determine: a) when ATC/RFF, the operator or others received the call regarding the occurrence b) the time needed to respond, and reasons for delays, if any c) the quantity and type of vehicles and equipment available/used d) the challenges in relation to the aircraft model involved in the occurrence (e.g., difficulty moving stretcher down the aisle) e) the actions by operator's personnel (e.g., station manager), aerodrome personnel and medical personnel (e.g., paramedics, staff at hospital) f) communications with aircraft, including difficulties encountered; and g) any other difficulties encountered or an operational disruption (e.g., incapacitated crew member)

Interviews

Type of information	Specific information	Objective of the analysis
Cabin crew member(s)	Refer section 5 - Guidance on conducting cabin crew member and passenger interviews	a) understand the occurrence from the beginning of the flight, from the cabin crew member's point of view, and gain insight into the sequence of events and difficulties encountered; and b) collect any suggestions for safety improvements

22 Appendix C – Guidance for investigating an unruly passenger event

General information

Type of information	Specific information	Objective of the analysis
Flight information	Obtain the following information pertaining to the occurrence: a) date of occurrence (UTC and LMT) b) time of occurrence (UTC and LMT) c) operator name d) flight number e) aircraft manufacturer's serial number (MSN), make/model/series, registration and date entered into service f) general location g) departure point h) phase of flight and flight level i) destination and intermediate stops (with ETAs and ETDs) j) diversion location, if applicable k) total number of crew members 1) flight crew	The objective is to provide factual information regarding the occurrence

2) cabin crew

l) total number of additional personnel assigned non-safety and emergency duties in the cabin by the operator; and

m) total number of passengers, including lap-held infants and other special categories of passengers

Injuries to persons	Obtain the following for the crew, passengers and other: a) injuries (crew): 1) fatal 2) serious 3) minor 4) none b) injuries (passengers) 1) fatal 2) serious 3) minor 4) none b) injuries (passengers) 1) fatal 2) serious 3) minor 4) none c) total in the aircraft: 1) fatal 2) serious 3) minor	The objective is to determine the number and the extent of injuries Note. - The causal/contributing factors may be addressed in a different section of the report (e.g., human performance)

4) none

d) injuries

1) fatal

2) serious

3) minor; and

none.

Documentation (Operator)

Type of information	Specific information	Objective of the analysis
Policies and procedures	Review the operations manual and determine pertinent reference: a) unruly passengers b) alcohol consumption on board c) smoking on board d) carry-on baggage policy e) seating restrictions f) the management of on-board medical events; and g) cabin crew member incapacitation, including those specific to single cabin crew member operations, if applicable	The objective is to review the operator's policies and procedures and to evaluate the content and adequacy of the following: a) policy and procedures regarding unruly passengers, focusing on: 1) content of the policy 2) means by which the policy is communication to employees and passengers 3) unruly passenger procedures for ground crew, flight crew and cabin crew, including the use of non-lethal protective devices such as plastic flexicuffs b) policy regarding alcohol consumption, smoking, carry-on baggage and seating restrictions on board: 1) content of the policy 2) means by which the policy is communicated to employees and passengers c) procedures for the management of on-board medical events, focusing on: 1) recognising, prioritising and responding to injured occupants 2) administering first aid 3) communication procedures

		4) procedures for seeking ground-based medical assistance and/or voluntary assistance from an on-board health professional 5) use of first aid and safety emergency equipment, as appropriate 6) managing the voluntary assistance from, and providing support to, an on-board health professional, if available d) procedures in the event of cabin crew member incapacitation, focusing on: 1) administering first aid 2) securing the incapacitated cabin crew member 3) informing the flight crew 4) reassigning required cabin crew stations and duties, if applicable e) procedures in the event of single cabin crew member operation incapacitation, focusing on: 1) notifying the flight crew 2) securing the incapacitated cabin crew member 3) administering first aid; and 4) assigning an able-bodied passenger (ABP) to care for the cabin crew member
Training programmes	Review the approved cabin crew safety training programmes (e.g., initial and recurrent) and determine pertinent references to:	The objective is to review the operator's training programmes (e.g., initial and recurrent) and to evaluate the content and adequacy of the following:

a) training content regarding unruly passengers

b) training content regarding the management of on-board medical events

c) training content regarding crew member incapacitation

d) human performance training, including HF/NTS training and joint flight/cabin crew HF/NTS training

e) training specific to safety and emergency equipment; and

f) training facilities and devices

Note-If applicable, review training for other personnel assigned non-safety and emergency duties in the cabin by the operator (e.g., interpreters, other service personnel)

A) training content and crew assessment methods, focusing on:

1) assessment of the situation's threat level

2) application of procedures according to the level of threat

3) communication of relevant information to the flight crew and other cabin crew, as applicable

4) coordination with the flight crew and other cabin crew, as applicable

5) administration of first aid and response to on-board medical events

6) flight and cbain crew member incapacitation

7) hands-on and simulated exercises on relevant safety and emergency equipment (e.g., plastic flexicuffs)

8) simulated exercises on managing unruly passengers

9) simulated exercises on responding to an in-flight medical event

10) human performance, including joint HF/NTS sessions with flight crew members; and

b) training facilities, focusing on the availability and suitability of:

1) classroom facilities

2) safety and emergency equipment used for training

3) cabin training devices; and

4) trainee-to-instructor ratios

Note-If the operator employs personnel assigned non-safety and emergency duties in the cabin, the training programme content

		and staffing practices should be reviewed to assess if this personnel's activities contributed to or hindered the management of the occurrence
Records	Review operator records and determine pertinent references to: a) cabin crew members: 1) licence or certification, if applicable 2) training records (including initial, date of last recurrent and line check) 3) aircraft type qualifications, including how many at any one time 4) roster/schedule 5) personnel files (including date of engagement) 6) any other relevant experience b) other personnel records, if applicable; and c) occurrence aircraft 1) aircraft technical log 2) cabin defect logbook 3) cabin interior configuration diagram (LOPA/S) 4) crew list and crew assignment 5) dispatch log	The objective is to review the operator's records related to the operating crew and aircraft involved in the occurrence and to evaluate the following: a) cabin crew members: 1) cabin crew members' qualifications and competencies to perform the required duties and responsibilities in the emergency situation 2) validity of the qualifications/competencies (e.g., based on the last date the crew members successfully completed required training) 3) factors that may affect their performance in a positive or negative manner, such as experience (based on date of engagement or previous flying experience with another operator) 4) factors that may affect performance; such as fatigue (derived from their flying schedule prior to the occurrence, layover rest or in-flight rest); and b) occurrence aircraft: 1) the location of passengers and crew in the cabin 2) technical malfunctions which may have affected the performance of aircraft systems. These may be traced through maintenance or cabin-defect logs

	6) MEL; and 7) passenger manifest and seat chart (including addresses and telephone numbers)	3) MELs for inoperative items such as emergency equipment and systems; and 4) damaged or unserviceable equipment or systems, such as in-flight entertainment system (IFE) or smoke detector
Other	Review other operator documentation and determine pertinent references to: a) operator bulletins and notices to cabin crew; and b) occurrence reports filed by the crew members	The objective is to review the operator's documentation and to evaluate the content and adequacy of the following: Changes in unruly passenger/passenger handling procedures and means of disseminating the information to crew members
Medical records	Review medical records and determine pertinent references to: a) crew report (first aid) b) medical report from doctor or nurse (e.g., if EMK used) c) technical logbook report d) ground service provider reports	The objective is to provide factual information regarding the occurrence Review all available documentation from crew and other personnel (e.g., doctor) and gather information
Other sources of information	Collect and review any visual, audio, or other "recorded" information from multiple sources: a) airport cameras b) portable electronic devices (PEDs) c) new media reports; and	The objective is to gather any information available to assist with the investigation

	d) social media	
Information from other parties	Review documentation of the aerodrome where the occurrence occurred (if applicable) and determine pertinent references to: Other parties involved in the occurrence	The objective is to review the following reports, if applicable: a) law enforcement personnel involvement (e.g., police) b) emergency medical services involvement/onsite medical care; and c) RFF involvement

Aircraft (cabin specific)

Type of information	Specific information	Objective of the analysis
Aircraft/cabin systems	Record the presence, condition (failed or damaged, serviceable and/or worked normally) and part/serial number of the following systems, as applicable: a) smoke detection system b) air conditioning, ventilation, and pressurisation systems c) exits and assisting evacuation means; and d) other systems	The objective is to evaluate if the systems played a role in the occurrence, were useful in managing the occurrence or were damaged during the occurrence. The analysis should determine if systems worked as intended and, if not, determine the reason: a) effectiveness of smoke detection system in alerting occupants b) effectiveness in managing the cabin environment (e.g., heating, cooling) c) exit operation/slide activation; and d) systems damaged. The analysis should focus on whether the damage was done by passengers (e.g., tampering with the lavatory smoke detector)
Safety and emergency equipment	Record the presence, condition (failed or damaged or serviceable and/or worked normally) and part/serial number of the following equipment, as applicable: a) portable fire extinguishers b) non-lethal protective devices (e.g., plastic flexicuffs); and c) other equipment	The objective is to evaluate the type of equipment that was available and to assess if it was useful or a hindrance in managing the occurrence or if the removal/use/theft of equipment played a role in the occurrence. The analysis should determine if: a) the required equipment was available, accessible and functional b) instructions on how to use the equipment were effective c) additional equipment, not found on board, would have been helpful; and

		d) equipment removed/damaged. The analysis should focus on whether the removal/use of emergency equipment was done by the crew or by passengers (including theft)
Condition of the cabin	Record the presence, condition (failed or damaged or serviceable and/or worked normally) and part/serial number of the following, as applicable: a) IFE and corded devices (e.g., IFE remote controls, headsets) b) smoke detection system c) passenger seat damage or malfunction d) air conditioning, ventilation and pressurisation systems e) passenger sets f) overhead lockers g) reading lights h) tray tables i) lavatories j) carpets; and k) any other furnishing	The objective is to evaluate the reason for failures/damage, if applicable, and how this may have impacted the injuries sustained: a) IFE/devices damage or malfunction b) evidence of smoke detector tampering, malfunction, or damage c) location and evidence of damaged seats, overhead lockers, lavatory interiors, etc.; and d) environmental conditions in the cabin at the time of the occurrence (e.g., heat, humidity, cold, odour, etc.)

Human performance

Type of information	Specific information	Objective of the analysis
Pre-occurrence actions	Review the information on cabin crew performance in pre-flight and in-flight activities prior to the occurrence: a) conducting or participating in crew briefings (including join briefings, if applicable) b) conducting passenger safety briefings c) monitoring the cabin for security-related issues; and d) managing passengers and cabin	The objective is to evaluate how the cabin crew performed pre-flight and in-flight duties and responsibilities. The analysis should determine: a) if the crew members participated in a pre-flight briefing and, if so, what was the content b) what safety information was given to passengers prior to departure (e.g., through a safety demonstration) c) if the crew members conducted cabin surveillance to identify/monitor potential sources of problems and, if so, which areas on board were monitored (e.g., lavatories, cargo areas if accessible during flight, etc.) and at what frequency d) if a potential situation was suspected, actions taken by the crew (e.g., investigating abnormal behaviours or cabin conditions); and e) how cabin crew managed situations such as delays, system malfunctions, etc.
Actions during the occurrence	Review the information on cabin crew performance in managing the occurrence: a) cabin activities at the time the unruly passenger's behaviour became apparent b) recognising/reacting to information regarding handling the unruly passenger	The objective is to evaluate how the cabin crew managed the occurrence. The analysis should determine: a) activities being undertaken in the cabin at the time the occurrence first became apparent b) how the cabin crew became aware of the unruly passenger (on ground or in-flight) and their response

c) actions to handle the unruly passenger	c) if alcohol played a role in the occurrence. If so, the analysis should describe consumption and why excess consumption was not detected or why it was permitted
d) difficulties encountered during the occurrence	d) how crew members attempted to manage the passenger (per operator procedures for each level of threat)
e) HF/NTS among cabin crew and with flight crew	e) actions taken if the passenger could not be handled/managed/restrained
f) operating systems and equipment	f) difficulties reaching the passenger due to seating location (e.g., middle seat of five abreast row)
g) providing instructions to passengers; and	g) the impact of the number of cabin crew members on board, with regards to the actions taken
h) managing passengers and cabin	h) how HF/NTS aspects were managed (communication, cooperation, coordination), including how tasks were assigned to crew members and how they managed the workload and time constraints. This should include both positive and negative HF/NTS aspects (e.g., difficulties in understanding instructions, high workload positions versus low/shared workload) positions
	i) a description of any equipment used (e.g., plastic flexicuffs)
	j) any difficulty in operating systems or using equipment (e.g., IFE, cabin environmental controls, PSU switches, etc.). The analysis should focus on the possible reasons
	k) if instructions were given to passengers to minimise the effects of the unruly passenger's behaviour, and by whom
	l) if able bodied passengers (ABPs) were requested by the crew and what instructions were given to them

		m) how cabin crew managed passengers and cabin (e.g., relocating passengers) o) other activities performed in response to the occurrence (e.g., flight deck lock down)
Post-occurrence actions	Review the information on cabin crew performance in managing the situation after the occurrence: a) managing passengers post-occurrence b) managing crew/passenger injuries c) operating systems and equipment d) monitoring the cabin e) continued communication with flight crew; and f) completing applicable documentation	The objective is to evaluate how the cabin crew managed the post-occurrence situation: a) if cabin crew applied security procedures (restraints) for continued monitoring of the unruly passenger b) if cabin crew applied procedures for managing on-board medical events, such as administering first aid to injured passengers and/or seeking voluntary medical assistance from an on-board health professional c) if cabin crew applied crew member incapacitation procedures (including those specific to single cabin crew member operations). The analysis should focus on actions taken to respond to incapacitated crew members who could not continue their duties (e.g., reassigning cabin crew stations so that all exits are staffed for landing) d) if cabin crew had any difficulty operating systems or equipment (e.g., portable oxygen, FAK, AED, etc.), the analysis should focus on the possible reasons e) if cabin crew monitored the "clear zone" outside the flight deck, cabin, galley, lavatories, remote areas, crew rest areas and cargo areas, if accessible from the passenger compartment, during the remainder of flight for security related issues

		f) if cabin crew applied cabin/flight crew communication procedures; and g) if cabin crew completed appropriate documentation, including notification cards to unruly passengers, if applicable
Pre-occurrence actions	Review the information on passenger action/response to pre-boarding/post boarding/in-flight activities: a) travel itinerary (e.g., traffic problems, prior flight/connecting flight, etc.) b) conditions prior to boarding (flight delays, gate changes, information to passengers, identification of potential problem passengers) c) fees (baggage, amenities, etc.) d) delays at security screening or customs e) delay or loss of transit passenger baggage f) alcohol consumption prior to/during flight; and g) any unusual behaviour noticed by ground crew or other passengers	The objective is to evaluate what surrounding circumstances affected passengers and what information passengers received. The analysis should determine contributing factors to the occurrence: a) if the communication of information to passengers was timely and effective b) if the information provided to passengers was clearly understood c) if passengers or ground crew who noticed anything unusual communicated it to the appropriate ground authorities or to the crew. If not, why not d) if there were problems during boarding e.g., seat assignments, inefficient, slow or delayed boarding, baggage issues, etc.) e) if there were seat pitch or personal space incursion issues f) inappropriate touching or overt sexual behaviour/abuse or harassment g) conditions in the cabin (noise levels, temperature, unserviceable systems); and h) service or comfort issues (e.g., level of service, disruption of service, incorrect or missing meals, aisle/lavatory access blocked for long periods, blankets, pillows, etc.)

Actions during the occurrence	Review the information to assess passenger performance during the occurrence: a) recognising the situation b) information given to passengers c) instructions given to passengers d) reacting to the information/instructions; and e) other passengers' reactions	The objective is to evaluate how the passengers behaved/reacted during the occurrence. The analysis should determine: a) if/how the passengers became aware of the occurrence b) how passengers understood and responded to the information given by the crew regarding the situation c) how passengers understood and responded to the instructions given by the crew (e.g., relocating seats) d) any other passenger intervention during the occurrence; and e) if they noticed other passengers' reactions (e.g., passenger in panic)
Post-occurrence actions	Review the information on passenger performance after the occurrence: a) communicating with cabin crew b) interaction with other passengers/crew c) information given to passengers d) instructions given to passengers; and e) reacting to the information/instructions	The objective is to evaluate how passengers reacted following the occurrence. The analysis should determine: a) if passengers requested assistance due to injuries or communicated information to cabin crew about conditions in the cabin and the crew's response b) if other passengers or crew members were injured around them and how they reacted (e.g., assisted others) c) how passengers understood and responded to the information given by the crew regarding the situation (e.g., aircraft diversion, ATC hold); and d) how passengers reacted to law enforcement or other personnel's intervention

Additional information

Type of information	Specific information	Objective of the analysis
Post-occurrence information	Review the information to assess the following activities, if applicable: assistance on arrival.	The objective is to evaluate how the operator/law enforcement personnel/others responded to and managed the unruly passenger once the aircraft landed. The analysis should determine: a) when ATC, law enforcement, the operator or others received the call regarding the occurrence b) the time needed to respond and reasons for delays, if any c) the quantity and type of vehicles and equipment available/used d) the challenges in relation to the aircraft model involved in the occurrence (e.g., difficulty moving down the aisle) e) the actions by operator's personnel (e.g., station manager), aerodrome personnel and law enforcement personnel (e.g., police) f) communications with aircraft, including difficulties encountered; and g) any other difficulty encountered (operational disruption due to diversion)

Interviews

Type of information	Specific information	Objective of the analysis
Cabin crew member(s)	Refer section 5 - Guidance on conducting cabin crew member	a) understand the occurrence from the beginning of the flight, from the cabin crew member's point of view and gain insight into the sequence of events and difficulties encountered; and b) collect any suggestions for safety or security improvements
Passengers	Refer to Refer section 5 - Guidance on conducting passenger interviews	a) understand the occurrence from the beginning of the flight, from the passenger's point of view and gain insight into the sequence of events and difficulties encountered; and b) collect any suggestions for safety or security improvements