International Civil Aviation Organization

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DANGEROUS GOODS PANEL (DGP)

THIRTIETH MEETING

Montréal, Canada, 6 to 10 October 2025

Agenda Item 2: Managing air-specific safety risks and identifying anomalies (REC-A-DGS-2027)
2.4: Development of proposals, if necessary, for amendments to the *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* (Doc 9481) for incorporation in the 2027-2028 Edition

DRAFT AMENDMENTS TO THE EMERGENCY RESPONSE GUIDANCE

(Presented by the Secretary)

SUMMARY

This working paper presents proposed amendments to, *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* (Doc 9481).

Action by the DGP: The DGP is invited to:

a) review the amendments to Doc 9481 presented in Appendix A to this working paper; and
b) recommended that the proposed amendments, subject to endorsement by FLTOPSP-SCGSWG and FLTOPSP-CSSWG, be incorporated in the 2027-2028 Edition of the Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods (Doc 9481).

1. INTRODUCTION

1.1 The twenty-ninth meeting of the DGP (DGP/29, Montréal, 13 to 17 November 2023) was invited to consider amendments to the cabin crew procedures for dangerous goods incidents in the passenger cabin during flight contained in Sections 3.3 and 3.4 of the *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* (Doc 9481). The amendments were drafted with the advice and expertise of the ICAO Cabin Safety Group (ICSG). DGP/29 recommended that the proposed amendments be incorporated in the 2025-2026 Edition of the *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* (Doc 9481), subject to minor revisions to address issues raised that would be made following the meeting through correspondence (see paragraph 9.1 of the DGP/29 report). Those developing the revisions identified a need for more substantial ones following DGP/29, and they could not be completed within publication deadlines. It was therefore recommended to delay amending Doc 9481 until the 2027-2028 Edition. The Secretariat invited interested DGP members and advisers to complete the

work with members of the Safe Carriage of Goods Specific Working Group of the Flight Operations Panel (FLTOPSP-SCGSWG), which had been tasked by the Air Navigation Commission to develop procedures for preventing and responding to incidents involving lithium batteries carried by crew, passengers and the operator and through coordination with ICSG. This resulted in the proposed amendments to Doc 9481 presented in the appendix to this working paper.

1.2 The amendments also include proposed amendments to the accessibility of dangerous goods and cargo compartment classification and location guidance in Doc 9481 developed by the Secretariat. The amendment to the accessibility of dangerous goods guidance is proposed to address inconsistencies with the loading of cargo aircraft requirements in Part 7;.2.4.1 of the Technical Instructions. It is proposed to replace the details in Doc 9481 that simply repeat the requirements in the Technical Instructions with a reference to the Technical Instructions. The amendments to the guidance on cargo compartment classification and locations are proposed as a basis for a more thorough discussion to address misalignments between the guidance and national airworthiness requirements it references. The misalignments were identified at the 2024 Dangerous Goods Panel Working Group Meeting (Montreal, 21 to 25 October 2024) (DGP-WG/24) (see paragraph 4.2.4.1 of the DGP-WG/24 report). The proposed amendments align Section 1.1 of Doc 9481 with similar provisions in *Guidance for Safe Operations Involving Aeroplane Cargo Compartments* (Doc 10102), which are more current.

2. REVISIONS TO AMENDMENT PRESENTED TO DGP/29

2.1 Revisions to the DGP/29 proposal include:

a) Emphasizing the importance of protective equipment use and removing previous text that discouraged its use if it would lead to delays responding to an urgent incident;

b) Emphasizing the need to validate fire containment device performance claims;

c) Defining “fire-fighting gloves” and referencing them for cabin and flight deck fires, particularly those involving lithium batteries;

d) Defining “fire” to include smoke, flames, or fumes and adding clarification regarding the intended use of “fire” versus the other specific hazards;

e) Adding reminders that procedures serve as guidance for an operator to develop its emergency response programme;

f) Streamlining procedures and removing unnecessary steps;

g) Eliminating recommendations for leaving portable electronic devices in place a certain amount of time before placing them in a container;

h) Clarifying firefighting steps for lithium battery fires; and

i) Highlighting safety management systems in the introduction.

3. PROPOSED AMENDMENTS

3.1 The amendments are presented in Appendix A to this working paper. They will also be presented to the Second Meeting of the FLTOPSP-SCGSWG (FLTOPSP-SCGSWG/2, 10 to 14 November 2025, Montréal) and the first meeting of the Cabin Safety Specific Working Group of FLTOPSP (FLTOPSP-CSSWG /1, 24 to 28 November 2025) (FLTOPSP-CSSWG supersedes the ICSG). Any revisions that these groups propose will be coordinated with DGP through correspondence.

3.2 Appendix B to this working paper presents the revisions to what was reviewed at DGP/29 (Sections 3 of Doc 9481), and Appendix C presents a clean version of the complete amendment to facilitate review.

4. ACTION BY THE DGP

4.1 The DGP is invited to:

a) review the amendments to Doc 9481 presented in Appendix A to this working paper; and

b) recommended that the proposed amendments, subject to endorsement by FLTOPSP-SCGSWG and FLTOPSP-CSSWG, be incorporated in the 2027-2028 Edition of the *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* (Doc 9481).

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APPENDIX A

PROPOSED AMENDMENTS TO EMERGENCY RESPONSE GUIDANCE FOR AIRCRAFT INCIDENTS INVOLVING DANGEROUS GOODS (DOC 9481)

FOREWORD

Annex 18 to the Convention on International Civil Aviation – *The Safe Transport of Dangerous Goods by Air* – requires that "The operator shall provide such information in the Operations Manual as will enable the flight crew to carry out its responsibilities with regard to the transport of dangerous goods and shall provide instructions as to the action to be taken in the event of emergencies arising involving dangerous goods." This requirement is also included in the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284). Annex 6, Part I, Appendix 2 also requires that "information and instructions on the carriage of dangerous goods, including action to be taken in the event of an emergency" be included in the operations manual.

This document has been developed with the assistance of the Dangerous Goods Panel to provide guidance to States and operators for developing procedures and policies for ~~dealing~~ crew to deal with dangerous goods incidents on board aircraft. ~~It does not cover incidents which occur while the aircraft is on the ground, since emergency services should be available for such occurrences.~~ The guidance in this document focuses on incidents during flight. It can, however, be adapted to establish procedures to address the unique aspects that may be associated with incidents that occur while the aircraft is on the ground using a risk-based approach.

This document contains general information on the factors that may need to be considered when dealing with any dangerous goods incident. Guidance, in the form of ~~checklists~~ procedures, is given for both flight crew and cabin crew, and is intended to be used in association with existing emergency procedures established in the aircraft flight manual. In addition, a list of dangerous goods is presented, both alphabetically and by UN (United Nations) number. The list identifies an appropriate emergency response drill for each item and a chart gives details of the drill and identifies other relevant safety matters. The list of dangerous goods presented in this document is based on the Dangerous Goods List (Table 3-1) contained in the 2025–2026 edition of Doc 9284 and reflects, therefore, all additions, deletions and changes to Table 3-1 introduced in that edition of the Technical Instructions. ~~Operators may wish to develop their own material based on this document or they may include all or part of it, such as the list of dangerous goods and the associated drill chart, in their operations manual. The document may also be used in the required dangerous goods training programme for crew members.~~ Operators should use this document to develop procedures that take into account the type of aircraft, type of operation, and available emergency response equipment. A risk-based approach should be used to support the development of these procedures. The mandatory dangerous programmes for flight crews and other relevant personnel should include the operator's emergency response procedures.

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Section 1

GENERAL INFORMATION

1.1 CARGO COMPARTMENT CLASSIFICATION

Cargo compartments are classified in ~~most~~ many national airworthiness requirements ~~(such as FAR 25.857 and JAR 25.857)~~ as follows:

Class A. A Class A cargo or baggage compartment is one in which:

a) the presence of a fire would be easily discovered by a crew member while at the crew member's station; and

b) each part of the compartment is easily accessible in flight.

Class B. A Class B cargo or baggage compartment is one in which:

a) there is sufficient access in flight to enable a crew member, standing at any one access point and without stepping into the compartment, to ~~effectively reach~~ extinguish a fire occurring in any part of the compartment ~~with the contents of~~ using a hand fire extinguisher;

b) when the access provisions are being used, no hazardous ~~quantity~~ quantities of smoke, flames or extinguishing agent will enter any compartment occupied by the crew or passengers; and

c) there is a separate approved smoke detector or fire detector system to give warning at ~~the pilot or flight engineer station~~ a flight crew member station.

Class C. A Class C cargo or baggage compartment is one not meeting the requirements for either a Class A or B compartment but in which:

a) there is a separate approved smoke detector or fire detector system to give warning at ~~the pilot or~~ a flight ~~engineer~~ crew member station;

b) there is an approved built-in fire-extinguishing or suppression system controllable from the ~~pilot or flight engineer station~~ cockpit;

c) there are means ~~of excluding~~ to exclude hazardous quantities of smoke, flames, or extinguishing agent from any compartment occupied by the crew or passengers; and

d) there are means ~~of controlling~~ to control ventilation and ~~draughts~~ drafts within the compartment so that the extinguishing agent used can control any fire that may start within the compartment.

Class D. A Class D cargo or baggage compartment is one in which:

a) a fire occurring in it will be completely confined without endangering the safety of the aeroplane or the occupants;

b) there are means ~~of excluding~~ to exclude hazardous quantities of smoke, flames, or other noxious gases from any compartment occupied by the crew or passengers;

c) ventilation and ~~draughts~~ drafts are controlled within each compartment so that any fire likely to occur in the compartment will not progress beyond safe limits; and

d) ~~consideration is given to the effect of heat within the compartment on adjacent critical parts of the aeroplane~~ the compartment volume does not exceed 28.3 m3 (1 000 ft3).

~~For compartments of 14.2 m^3 or less, an airflow of 42.5 m^3 per hour is acceptable.~~

Note.— Certain Class D compartments are provided with ventilation, in which case a fire detector is also required. In addition, Class D compartments were historically permitted to be larger, if the volume and the ventilation rate per hour sum to less than 2 000 ft^3.

Class E. A Class E cargo compartment is one on aeroplanes used only for the carriage of cargo and in which:

a) there is a separate approved smoke or fire detector system to give warning at the pilot or flight engineer station;

b) there are means ~~of shutting~~ to shut off the ventilating airflow to or within the compartment, and the controls for these means are accessible to the flight crew in the crew compartment;

c) there are means ~~of excluding~~ to exclude hazardous quantities of smoke, flames, or noxious gases, from the flight crew compartment; and

d) the required crew emergency exits are accessible under any cargo loading condition~~s~~.

Class F. A Class F compartment must be located on the main deck and is one in which:

a) there is a separate approved smoke detector or fire detector system to give warning at the pilot or flight engineer station;

b) there are means to extinguish or control a fire without requiring a crew member to enter the compartment; and

c) there are means to exclude hazardous quantities of smoke, flames, or extinguishing agent from any compartment occupied by the crew or passengers.

1.2 CARGO COMPARTMENT LOCATIONS

Typically, Class A cargo compartments are small cargo compartments that may be located between the flight deck and the passenger cabin or adjacent to the galley area or at the back of the aircraft.

A Class B cargo compartment is usually much larger than a Class A cargo compartment and can be located in an area remote from the flight deck. Class B cargo compartments are found on “combi” aircraft between the flight deck and the passenger cabin or behind the passenger cabin at the rear of the aircraft.

Note.— A “combi” aircraft is one in which both cargo and passengers are carried on the main deck.

The volume of a Class C cargo compartment is usually larger than Class A or B and such cargo compartments are generally found under the floor ~~in wide-bodied~~ of the aircraft. A Class C cargo compartment may have ~~two fire extinguishing systems~~ more than one suppressant reservoir, enabling a second charge of extinguishant to be fired into the cargo compartment some time after the fire has initially been controlled by the first charge.

Instead of being equipped with fire detection and extinguishing systems, Class D cargo compartments are designed to control a fire by severely restricting the supply of oxygen. Class D cargo compartments are to be found under the passenger cabin floor on most jet transport aircraft. However, it must be appreciated that certain dangerous goods are themselves oxygen producers. Therefore, it cannot be assumed that a fire in a Class D cargo compartment will necessarily self-extinguish.

~~A Class E cargo compartment normally comprises the entire main deck compartment of a cargo aircraft.~~

A Class F cargo compartment is the main deck cargo compartment on a combi aeroplane, i.e. one where the main deck has both a passenger cabin and a cargo compartment.

A conventional passenger aeroplane is usually fitted with either Class C or Class D cargo compartments under the passenger cabin. A cargo aeroplane is usually fitted with a Class E main deck cargo compartment and with Class D ~~and/~~, Class C, or Class ~~C underfloor~~ E lower deck cargo compartments. A “combi” aeroplane is usually fitted with a Class B main deck cargo compartment, either in front or behind the passenger cabin and with a Class C and/or Class D cargo compartment under the floor. ~~The~~ A smaller commuter aeroplane, if not fitted as a conventional passenger aeroplane with a Class D cargo compartment, could be equipped with only a Class A cargo compartment, usually positioned in the area adjacent to the flight deck.

~~Helicopters are capable of carrying freight either in the main cabin (in a Class A cargo compartment) or under the cabin floor. The cargo compartment under the floor has no classification and the compartment is not capable of withstanding fire for any length of time. Some helicopters have cargo compartments which are at the rear of the aircraft and which are inaccessible from inside the helicopter. These cargo compartments are usually small and they are not fitted with any fire detection systems, extinguishing systems or liners.~~

1.3 FIRE EXTINGUISHERS

The most common fire extinguishers found on aircraft are those which have halon (BCF), halon replacement, dry agent, carbon dioxide (CO_2) or water as the firefighting agent. All ~~of~~ these types may not be present on any one aircraft. Guidance on the use of the fire extinguishers is contained in the operations manual and may also appear on the extinguishers themselves. The emergency response drills, described in Section 4, indicate which firefighting agents should be used and the instances where the use of water is considered dangerous.

1.4 OXYGEN EQUIPMENT

Fixed and portable oxygen equipment is provided in pressurized aircraft for the use of the crew and passengers. The equipment available to the flight crew usually has a gas-tight mask and can supply 100 per cent oxygen. The ~~aircraft may carry portable smoke hoods but, in general, the~~ equipment available to the cabin crew consists of portable oxygen bottles fitted with therapeutic masks. Additional passenger drop-~~out~~down masks may be available for use by cabin crew in the passenger cabin and galley~~/toilet~~ or lavatory areas. Both the passenger drop-~~out~~down masks and the therapeutic masks are designed to allow

a low flow of oxygen supplemented by air drawn in through valves or holes in the side of the mask. These masks are not intended to be gas-tight and, consequently, any toxic fumes or smoke present will be inhaled by passengers or crew using the masks. When smoke or fumes are present, or during firefighting, portable smoke hoods should be used to provide the necessary protection while supplying oxygen to the crew member.

1.5 ACCESSIBILITY OF DANGEROUS GOODS

Most ~~D~~ddangerous goods bearing the "cargo aircraft only" label are required to be accessible in flight, except ~~for those~~ in cases identified in Part 7, Chapter 2 of the Technical Instructions.~~:~~

~~a) loaded:~~

~~1) in a Class C aircraft cargo compartment;~~

~~2) in a unit load device equipped with a fire detection/suppression system equivalent to that required by the certification requirements of a Class C aircraft cargo compartment as determined by the appropriate national authority;~~

~~3) as external carriage by a helicopter; and~~

~~b) classified as:~~

~~1) flammable liquids (Class 3), Packing Group III, other than those with a subsidiary hazard of Class 8;~~

~~2) toxic substances (Division 6.1) with no subsidiary hazard other than Class 3;~~

~~3) infectious substances (Division 6.2);~~

~~4) radioactive materials (Class 7);~~

~~5) miscellaneous dangerous goods (Class 9);~~

~~6) UN 3528 – **Engine, internal combustion, flammable liquid powered** or **Engine, fuel cell, flammable liquid powered** or **Machinery, internal combustion, flammable liquid powered** or **Machinery, fuel cell, flammable liquid powered**; and~~

~~7) UN 3529 – **Engine, internal combustion, flammable gas powered** or **Engine, fuel cell, flammable gas powered** or **Machinery, internal combustion, flammable gas powered** or **Machinery, fuel cell, flammable gas powered**.~~

~~Other dangerous goods (those which do not bear "cargo aircraft only" labels) are not required to be accessible.~~

~~Part 7, Chapter 2 of the Technical Instructions sets out the full requirements on the accessibility of dangerous goods on cargo aircraft.~~

1.6 EMERGENCY RESPONSE KIT

Some operators provide dangerous goods emergency response kits for use aboard aircraft and also provide training to crew members regarding the use of the kit in dangerous goods incidents. Typically, a dangerous goods emergency response kit contains:

1) large, good quality polyethylene bags;

2) bag ties; and

3) long rubber gloves.

When reference is made in this document to an “emergency response kit”, it is intended that the kit should be comprised of at least this equipment.

Note.— The word “polyethylene” as used in this manual has the same meaning as “polythene”.

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Section 2

GENERAL CONSIDERATIONS

2.1 GENERAL

The following are considerations which may need to be taken into account in assessing an appropriate course of action to take in the event of an incident involving dangerous goods. These considerations apply whether the aircraft involved is carrying passengers, cargo or both.

1) Consideration should always be given to landing as soon as possible. If the situation permits, the relevant air traffic services should be informed of the dangerous goods on board, as indicated in Part 7, Chapter 4 of the Technical Instructions.

2) The appropriate fire or smoke removal emergency procedure approved for the aircraft type should always be carried out. Flight crew oxygen mask and regulators must be on and selected to the 100 per cent oxygen position to prevent the inhalation of smoke or fumes. Using the appropriate smoke removal emergency procedures should reduce the concentration of any contamination and help to avoid recirculation of contaminated air. Air conditioning systems should be operated at maximum capacity and all cabin air vented overboard (no recirculation of air) in order to reduce the concentration of any contamination in the air and to avoid recirculation of contaminated air.

~~3) Reducing altitude will reduce the rate of vaporization of liquid and may reduce the rate of leakage, but it may increase the rate of burning. Conversely, increasing altitude may reduce the rate of burning but may increase the rate of vaporization or leaking. If there is structural damage or an explosion hazard, consideration should be given to keeping the differential pressure as low as possible.~~

~~4~~3) The rate of ventilation should not be reduced in an attempt to extinguish a fire, as this will have an incapacitating effect on the passengers without significantly affecting the fire. Passengers are likely to suffocate through lack of oxygen before a fire is extinguished. Passenger survival chances are greatly enhanced by ensuring maximum cabin ventilation.

~~5~~4) Gas-tight breathing equipment should always be worn when attending an incident involving fire or fumes. The use of therapeutic masks with portable oxygen bottles or the passenger drop-out oxygen system to assist passengers in a smoke- or fume-filled cabin should not be considered, since considerable quantities of fumes or smoke would be inhaled through the valves or holes in the masks. A more effective aid to passengers in a smoke- or fume-filled environment would be the use of a wet towel or cloth held over the mouth and nose. A wet towel or cloth aids in filtering and is more effective at doing this than a dry towel or cloth. Cabin crew should take prompt action if smoke or fumes develop and move passengers away from the area involved and, if necessary, provide wet towels or cloths and give instructions to breathe through them.

~~6~~5) In general, water should not be used on a spillage or when fumes are present, since it may spread the spillage or increase the rate of fuming. Consideration should also be given to the possible presence of electrical components when using water extinguishers, but see 10).

~~7~~6) Besides the mandatory emergency equipment that is carried on an aircraft and the emergency response kit provided by some operators, many other items can be found that can be put to good use. These may include~~:~~, but are not limited to:

— bar or catering boxes;
— oven gloves~~/~~
— fire-~~resistant~~fighting gloves;
— polyethylene bags;
— blankets;~~ and~~
— towels~~.~~; and
— fire containment devices/kits etc.

~~8~~7) Hands should always be protected before touching suspicious packages or bottles.~~ Fire-resistant~~ Rubber gloves or oven gloves covered by polyethylene bags are likely to give suitable protection.

8) Throughout this document, the term “fire-fighting gloves” describes gloves that are specifically designed for fire-fighting in the cabin or flight deck, rather than cleaning up spills or handling food. These gloves should be properly tested and rated to address fires likely to occur on an aircraft, such as fires involving lithium batteries.

9) Care should always be taken when mopping up any spillage or leakage to ensure there will be no reaction between what is to be used for mopping up and the dangerous goods. If it appears there could be a reaction, mopping up should not be attempted but the spillage should be covered with polyethylene bags. If polyethylene bags are not available, care should be taken to ensure there will be no reaction between whatever is used to contain the item and the item itself.

10) In case of a spill of known or suspected dangerous goods in powder form, everything affected should be left undisturbed. This type of spill should not be covered with a fire agent or diluted with water. Passengers should be moved away from the area. Switching off recirculation fans should be considered. The area of the spillage should be covered using polyethylene or other plastic bags and blankets. The area should be kept isolated. After landing, only qualified specialists should deal with the situation.

11) If a fire has been dealt with successfully and it is obvious that inner packagings are intact, consideration should be given to using water to cool the packages and thus avoid the possibility of reignition, but see 6).

12) ~~A smoking ban~~ Smoking should be ~~introduced~~ prohibited when fumes or vapours are present.

13) In any incident in which rescue and firefighting (RFF) personnel come to the aircraft, either when dangerous goods are the cause of the incident or when dangerous goods are being carried on the aircraft and are not directly involved in the incident, a procedure should be established to ensure that the pilot-in-command’s dangerous goods notification form is immediately made available to the RFF services. Such a procedure might require the first flight crew member to leave the aircraft in the event of an emergency evacuation to deliver the pilot-in-command’s notification to the senior member of the RFF personnel.

14) If an incident involves a chemical substance which can be identified (by the UN proper shipping name or number, or by any other means), it may be possible, in some circumstances, to obtain helpful information from the various national chemical databanks. These databanks normally maintain 24-hour telephone accessibility and so can be reached by a phone-patch procedure.

Examples of such databanks are:

United States – CHEMTREC
www.chemtrec.com

Canada – CANUTEC
www.tc.gc.ca/eng/canutec/menu.htm

2.2 DANGEROUS GOODS IN THE PASSENGER CABIN

Apart from the exceptions listed in Part 8 of the Technical Instructions, dangerous goods are not permitted in the passenger cabin~~.~~ or on the flight deck. Nevertheless, dangerous goods may be carried into the cabin by passengers who are unaware of, or deliberately ignore, the requirements of the Technical Instructions concerning passengers and their baggage. It is also possible that an item to which a passenger is legitimately entitled (such as an item for medical purposes) may cause an incident.

To enable cabin crew to respond to an incident involving dangerous goods, the operator should equip its aircraft with firefighting and protective equipment, to include an adequate water supply and fire-fighting gloves that are rated to withstand the heat produced by lithium battery thermal runaway events. Some operators provide fire containment equipment for use by crew members as part of the procedures for battery / portable electronic device (PED) fire. The operator should develop detailed procedures for the use of all equipment provided and crews should be trained accordingly. Manufacturer's instructions and guidance should be considered in developing emergency response procedures. Manufacturer's claims of effectiveness should be verified by the airline or third party testing and should meet applicable industry standards.

Firefighting procedures should include precautions for the safety of the crew members involved. These should include the correct use of protective equipment, appropriate and relevant to the immediate risks presented by the stage to which the fire or thermal runaway has progressed. Unprotected firefighting should be minimized where possible.

Equipment should be placed in a suitable location(s) easily accessible by the cabin crew, taking into account the various configurations of the aircraft (such as multi deck, crew rest areas). Cabin crew members should be drilled and capable of using the specific equipment carried on board the operator's aircraft.

Note.— See 3.3~~.~~ and 3.4 – Cabin crew ~~checklists~~ procedures for dangerous goods incidents in the passenger cabin during flight.

2.3 DANGEROUS GOODS IN THE FLIGHT DECK

The flight crew's primary responsibility is the safe control of the aircraft. An immediate and decisive response to a dangerous goods incident that could impact the flight crew's ability to safely control the aircraft is therefore essential. The initial response should be to move the item involved in the incident from the flight deck to the cabin, if operationally feasible. This is especially critical for incidents involving a battery or a device containing a battery in thermal runaway because of the amount of smoke produced and the potential for a resulting fire to quickly become uncontrollable in a confined space. At the first signs of malfunction – such as slight bulging, screen discoloration, unusual odor, or excessive heat – priority should be given to the prompt removal of the device from the flight deck, if operationally feasible. Flight crew may act independently or request cabin crew assistance, when available, to manage fire on the flight deck.

~~2.3~~2.4 DANGEROUS GOODS IN THE UNDERFLOOR CARGO COMPARTMENTS

Dangerous goods may be carried as cargo in the underfloor cargo compartments. Spillages or leakages are unlikely to be detected during flight unless they cause noticeable fumes in the passenger cabin or on the flight deck. In the event of leakage, the air in the passenger cabin and on the flight deck may have become flammable, irritating or toxic. Non-essential electrics should be turned off and smoking should be prohibited. Also, the crew should use full face masks, (100 per cent oxygen) or smoke hoods. Wherever possible, the passengers should be provided with wet towels or cloths for use over the nose and mouth.

Smoke or fire in an underfloor cargo compartment may not have originated from any dangerous goods loaded in that compartment. Such goods, however, may be affected by any fire. Standard aircraft emergency procedures should always be followed to deal with the smoke or fire.

In some aircraft there is access from inside the aircraft to underfloor Class D cargo compartments. In general, even if access is possible, an entry should not be made since this will allow air to enter the compartment, which may worsen the situation.

If an incident has arisen in an underfloor cargo compartment, the passengers and crew should be evacuated from the aircraft before any attempt is made to open the cargo compartment doors. The cargo compartment doors should be opened with the emergency services in attendance.

2.4 DANGEROUS GOODS ON THE MAIN DECK OF "COMBI" AIRCRAFT

Note.— A "combi" aircraft is one in which both cargo and passengers are carried on the main deck.

Spillages or leakages of dangerous goods which cause fumes may be detected in the passenger cabin or on the flight deck. Smoke or fire which is detected may not have originated from any dangerous goods which are loaded in the cargo compartment but those goods may be affected by any fire.

The recommended aircraft emergency procedures for smoke and fire should always be followed. However, any action taken to evacuate smoke may not necessarily help to control a fire. Care must be taken to ensure the proper checklists are used since some smoke removal checklists are only for a transient generation of smoke and not for removing smoke from a continuous production source.

Although it may be possible to enter the cargo compartment from inside the aircraft, this should be done with great care so as not to allow smoke or fumes to enter the passenger cabin or flight deck.

However, if the decision is taken to enter the cargo compartment and the cause of the incident is discovered to be dangerous goods, reference should be made to Section 4 of this document, which contains a list of dangerous goods and the relevant emergency response drills and gives guidance for dealing with the incident.

Smoke or fumes may enter the passenger cabin or flight deck. If this happens, the crew should assume that the aircraft's atmosphere has possibly become contaminated with irritating, flammable or toxic fumes and appropriate action should be taken. This should include the use by the crew of full face masks (100 per cent oxygen) or smoke hoods, as appropriate. Wherever possible, passengers should be provided with wet towels or cloths with instructions to place them over the nose and mouth. All non-essential electrics should be turned off and smoking should be prohibited. Smoke evacuation emergency procedures should be carried out as soon as possible to ventilate the cabin to the maximum extent possible.

If an incident has arisen in a main deck cargo compartment, the passengers and crew should be evacuated from the aircraft before any attempt is made to open the cargo compartment doors. The cargo compartment doors should be opened with the emergency services in attendance.

2.5 DANGEROUS GOODS ON CARGO AIRCRAFT

Dangerous goods may be carried on cargo aircraft in either the underfloor cargo compartments or on the main deck.

Incidents in an underfloor cargo compartment. See 2.3.

Incidents in the main deck cargo compartment. Dangerous goods carried on the main deck of a cargo aircraft fall into two broad categories:

a) those which are permitted either for carriage on a passenger aircraft, or which are cargo aircraft only (CAO) dangerous goods or quantities not subject to additional loading requirements applicable to other CAO dangerous goods. Depending on the circumstances (position on main deck, types of unit load devices (ULDs) used, etc.), these may be completely inaccessible.

b) those which may only be carried on a cargo aircraft and are subject to additional loading requirements which are set out in Part 7;2.4.1 of the Technical Instructions. These dangerous goods may be required to be accessible which means they must be loaded so that the crew can handle and, where size and mass permit, separate such packages or overpacks from other cargo. In the event of an incident involving these dangerous goods, an assessment will have to be made of the practicality of

attempting direct physical intervention. In any event, both for accessible and non-accessible dangerous goods, standard aircraft emergency procedures should always be followed.

An attempt should be made to establish the cause of an incident occurring on the main deck. The following actions can be considered:

— Attempt to locate the source of the incident and identify whether there are fumes or smoke or evidence of spillage or leakage.

— Follow the appropriate aircraft emergency procedures for fire or for smoke removal if fumes or smoke are present.

— Identify the dangerous goods involved and use the notification to pilot-in-command (see Technical Instructions, Part 7, Chapter 4) to ~~confirm~~ determine the proper shipping name and/or UN or ID number of the goods.

— After establishing the identity of the dangerous goods, refer to Section 4 and from either the alphabetical or numerical list of dangerous goods note the drill assigned to the particular item.

— Refer to the chart in Section 4 and use the guidance given ~~against~~ according to the appropriate emergency response drill to deal with the incident.

Section 3

EXAMPLES OF DANGEROUS GOODS INCIDENT PROCEDURES

Operators should use these example procedures to develop specific procedures that take into account the type of aircraft, type of operation, and available emergency response equipment. A risk-based approch should be used to support the development of the specific procedures.

Note 1.— The terms fire, smoke, fumes and flames are referred to throughout these procedures. When "fire" is referred to on its own, it is intended to capture any of the other events. When "smoke", "fumes" or "flames' are specifically referred to, it is intended to highlight that specific hazard.

Note 2.— The following procedures are composed of numbered steps. In some cases, the steps are sequential, while in others the steps can occur simultaneously, by one or more crew members, or in a different order. Operators must consider the specifics of their operation before adapting them into their own procedures.

3.1 FLIGHT CREW PROCEDURES FOR DANGEROUS GOODS INCIDENTS

Step	*Flight crew action*
1.	**FOLLOW THE APPROPRIATE AIRCRAFT EMERGENCY PROCEDURES FOR ~~FIRE OR~~ SMOKE, FUMES or FLAME REMOVAL**
2.	**NO SMOKING SIGN ON**
3.	**CONSIDER LANDING AS SOON AS POSSIBLE**
4.	**CONSIDER TURNING OFF NON-ESSENTIAL ELECTRICAL POWER**
5.	**DETERMINE SOURCE OF SMOKE / FUMES / ~~FIRE~~FLAMES**
6.	**FOR DANGEROUS GOODS INCIDENTS IN THE PASSENGER CABIN, SEE CABIN CREW PROCEDURES AND COORDINATE COCKPIT / CABIN CREW ACTIONS**
7.	**DETERMINE EMERGENCY RESPONSE DRILL CODE**
8.	**USE GUIDANCE FROM AIRCRAFT EMERGENCY RESPONSE DRILLS CHART TO HELP DEAL WITH INCIDENT**
9.	**IF THE SITUATION PERMITS, NOTIFY ATC OF THE DANGEROUS GOODS BEING CARRIED**
After landing	
1.	**DISEMBARK PASSENGERS AND CREW BEFORE OPENING ANY CARGO COMPARTMENT DOORS**

Step	*Flight crew action*
2.	**INFORM GROUND PERSONNEL / EMERGENCY SERVICES OF NATURE OF ITEM AND WHERE STOWED**
3.	**MAKE APPROPRIATE ENTRY IN MAINTENANCE LOG**

3.2 AMPLIFIED FLIGHT CREW PROCEDURES FOR DANGEROUS GOODS INCIDENTS

Amplified flight crew procedures for dangerous goods incidents	
Step	*Flight crew Aaction*
1.	**FOLLOW THE APPROPRIATE AIRCRAFT EMERGENCY PROCEDURES FOR FIRE OR SMOKE, FUMES, OR FLAMES REMOVAL** (self-explanatory)
2.	**NO SMOKING SIGN ON** A sSmoking ban should be introduced prohibited when fumes or vapours are present and be continued for the remainder of the flight.
3.	**CONSIDER LANDING AS SOON AS POSSIBLE** Because of the difficulties and possibly disastrous consequences of any dangerous goods incident, consideration should be given to landing as soon as possible. The decision to land at the nearest suitable aerodrome should be made early rather than late, when an incident may have developed to a very critical point, severely restricting operational flexibility.
4.	**CONSIDER TURNING OFF NON-ESSENTIAL ELECTRICAL POWER** As the incident may be caused by electrical problems or as electrical systems may be affected by any incident, and particularly as firefighting activities, etc., may damage electric systems, turn off all non-essential electrical items. Retain power only to those instruments, systems and controls necessary for the continued safety of the aircraft. Do not restore power until it is positively safe to do so.
5.	**DETERMINE SOURCE OF SMOKE / FUMES / FIRE FLAMES** The source of any smoke / fumes / fire may be difficult to determine. Effective firefighting or containment procedures can best be accomplished when the source of the incident is identified.
6.	**FOR DANGEROUS GOODS INCIDENTS IN THE PASSENGER CABIN, SEE CABIN CREW PROCEDURES AND COORDINATE COCKPIT / CABIN CREW ACTIONS** Incidents in the passenger cabin should be dealt with by the cabin crew using the appropriate procedures. It is essential that the cabin crew and the flight crew coordinate their actions and that each be kept fully informed of the other's actions and intentions.

Amplified flight crew procedures for dangerous goods incidents	
Step	*Flight crew Aaction*
7.	**DETERMINE EMERGENCY RESPONSE DRILL CODE** When the item has been identified, the corresponding entry on the pilot-in-command's dangerous goods notification form should be found. The applicable emergency response drill code may be given on the notification form, or if not given, can be found by noting the proper shipping name or the UN number on the notification form and using the alphabetical or numerical list of dangerous goods. If the item causing the incident is not listed on the notification form, an attempt should be made to determine the name or the nature of the substance. The alphabetical list can then be used to determine the emergency response drill code. *Note.— The alphabetical and numerical lists referred to are those in Section 4 of this document.*
8.	**USE GUIDANCE FROM AIRCRAFT EMERGENCY RESPONSE DRILLS CHART TO HELP DEAL WITH INCIDENT** The drill code assigned to an item of dangerous goods consists of a number plus one or two letters. Referring to the chart of emergency response drills, each drill number corresponds to a line of information concerning the hazard posed by that substance and guidance on the preferable action that should be taken. The drill letter is shown separately on the drill chart; it indicates other possible hazards of the substance. In some cases, the guidance given by the drill number may be further refined by the information given by the drill letter.
9.	**IF THE SITUATION PERMITS, NOTIFY ATC OF THE DANGEROUS GOODS BEING CARRIED** If an in-flight emergency occurs and the situation permits, the pilot-in-command should inform the appropriate air traffic services unit of the dangerous goods on board the aircraft. Wherever possible this information should include the proper shipping name and/or UN number, the class/division and for Class 1 the compatibility group, any identified subsidiary hazard(s), the quantity and the location on board the aircraft. When it is not considered possible to include all the information, those parts thought most relevant in the circumstances should be given.

Amplified flight crew procedures for dangerous goods incidents	
Step	*Flight crew Aaction*
After landing	
1.	**DISEMBARK PASSENGERS AND CREW BEFORE OPENING ANY CARGO COMPARTMENT DOORS** Even if it has not been necessary to complete an emergency evacuation after landing, passengers and crew should disembark before any attempt is made to open the cargo compartment doors and before any further action is taken to deal with a dangerous goods incident. The cargo compartment doors should be opened with the emergency services in attendance.
2.	**INFORM GROUND PERSONNEL / EMERGENCY SERVICES OF NATURE OF ITEM AND WHERE STOWED** Upon arrival, take the necessary steps to identify to the ground staff where the item is stowed. Pass on by the quickest available means all information about the item including, when appropriate, a copy of the notification to pilot-in-command.
3.	**MAKE APPROPRIATE ENTRY IN MAINTENANCE LOG** An entry should be made in the maintenance log that a check needs to be carried out to ensure that any leakage or spillage of dangerous goods has not damaged the aircraft structure or systems and that some aircraft equipment (such as fire extinguishers, emergency response kit) may need replenishing or replacing.

3.3 CABIN CREW PROCEDURES FOR DANGEROUS GOODS INCIDENTS IN THE PASSENGER CABIN DURING FLIGHT

This section consists of cabin crew procedures for dangerous goods incidents in the passenger cabin during flight involving:

a) battery / portable electronic device (PED) fire ~~/ smoke~~ (see 3.3.1);

b) overhead bin battery / portable electronic device (PED) fire ~~/ smoke~~ (see 3.3.2);

c) overheated battery / electrical smell involving a portable electronic device (PED) – no visible ~~fire~~ flame or smoke (see 3.3.3);

d) PED ~~inadvertently crushed or damaged in electrically adjustable~~ fallen into / trapped in a passenger seat (see 3.3.4);

e) battery / portable electronic device (PED) fire on the flight deck (see 3.3.5);

~~e~~f) fire involving dangerous goods (see 3.3~~.5~~.6); and

~~f~~g) spillage or leakage of dangerous goods (see 3.3~~.6~~.7)

Note 1.— Although this guidance material presents sequences of tasks, some of these actions occur simultaneously when carried out by crew members in a multi-cabin crew operation.

Note 2.— The operator should ensure its aircraft are equipped with appropriate firefighting and protective equipment for use by crew members.

Note 3.— The operator should ensure the crew is trained to use all firefighting and protective equipment including the donning and removal of protective equipment. Firefighting procedures should include precautions for the safety of the crew member(s) involved. These should include the correct use of protective equipment that is appropriate and relevant to the immediate risks presented by the stage to which the fire or thermal runaway has progressed. Unprotected firefighting should be minimized where possible.

Note 4.— In a single cabin crew member operation, some of the actions listed in this section should be carried out with the assistance of other persons (e.g., able-bodied passengers). The operating cabin crew member should assign those persons to communicate with the flight crew and provide back-up, while the cabin crew member fights the fire.

Note 5.— The terms fire, smoke, fumes and flames are referred to throughout these procedures. When "fire" is referred to on its own, it is intended to capture any of the other events. When "smoke", "fumes" or "flames' are specifically referred to, it is intended to highlight that specific hazard.

3.3.1 Battery / portable electronic device (PED) fire ~~/ smoke~~

Procedures for battery / portable electronic device (PED) fire ~~/ smoke~~	
Step	*Cabin crew action*
1.	**IDENTIFY THE ~~ITEM~~ SOURCE OF THE FIRE** ~~*Note.— It may not be possible to identify the item (source of fire) immediately. In this case, apply Step 2 first, and then attempt to identify it.*~~ ~~**Caution:**~~ ~~In order to avoid injury from a flash fire, it is not recommended to open the affected baggage when there is any indication of smoke or flames.~~
2.	**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS**
~~2~~3.	**APPLY FIREFIGHTING PROCEDURE TO EXTINGUISH FLAMES** ~~a) Obtain and use the appropriate fire extinguisher.~~ ~~b) Retrieve and use protective equipment, as applicable to the situation.~~ ~~c) Move passengers away from the area, if possible.~~ ~~d) Notify pilot-in-command / other cabin crew members.~~ ~~*Note.— Actions should occur simultaneously in a multi-crew operation.*~~
~~3~~4.	**REMOVE POWER** ~~a) Disconnect the device from the power supply, if safe to do so.~~ ~~b) Turn off in-seat power, if applicable.~~ ~~c) Verify that power to the remaining electrical outlets remains off, if applicable.~~ ~~**Caution:**~~ ~~Do not attempt to remove the battery from the device.~~
~~4~~5.	~~**DOUSE THE DEVICE WITH**~~ **POUR WATER (OR OTHER NON-FLAMMABLE LIQUID) ON THE DEVICE** ~~*Note.— Liquid may turn to steam when applied to the hot battery.*~~
~~5~~6.	~~**LEAVE THE DEVICE IN ITS PLACE AND MONITOR FOR ANY REIGNITION**~~**OBTAIN A SUITABLE EMPTY CONTAINER** ~~a) If smoke or flames reappear, repeat Steps 2 and 4.~~ ~~**Caution:**~~ ~~— Do not attempt to pick up or move the device.~~ ~~— Do not cover or enclose the device.~~ ~~— Do not use ice or dry ice to cool the device.~~

Procedures for battery / portable electronic device (PED) fire ~~/ smoke~~	
Step	*Cabin crew action*
~~6~~7.	**~~WHEN THE DEVICE HAS COOLED~~SUBMERGE THE DEVICE IN WATER (OR OTHER NON-FLAMMABLE LIQUID) IN THE CONTAINER** ~~(such as approximately 10 to 15 minutes)~~ ~~a) Obtain a suitable empty container.~~ ~~b) Fill the container with enough water (or other non-flammable liquid) to submerge the device.~~ ~~c) Using protective equipment, place the device in the container and completely submerge in water (or other non-flammable liquid).~~ ~~d) Stow and secure (if possible) the container to prevent spillage.~~
8.	**STOW AND SECURE (IF POSSIBLE) THE CONTAINER TO PREVENT SPILLAGE**
~~7~~9.	**MONITOR THE DEVICE AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT**
~~8~~10.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION** ~~a) Apply operator's post-incident procedures.~~

3.3.2 Overhead bin battery / portable electronic device (PED) fire ~~/ smoke~~

~~**Procedures for o**~~**Overhead bin battery / portable electronic device (PED) fire ~~/ smoke~~**	
Step	*Cabin crew action*
1.	**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS**
~~1~~2.	**APPLY FIREFIGHTING PROCEDURE TO EXTINGUISH FLAMES** ~~a) Obtain and use the appropriate fire extinguisher.~~ ~~b) Retrieve and use protective equipment, as applicable to the situation.~~ ~~c) Move passengers away from the area, if possible.~~ ~~d) Notify pilot-in-command / other cabin crew members.~~ ~~*Note. — Actions should occur simultaneously in a multi-crew operation.*~~

~~Procedures for o~~Overhead bin battery / portable electronic device (PED) fire ~~/ smoke~~	
Step	*Cabin crew action*
~~2~~3.	**IDENTIFY THE ~~ITEM~~ SOURCE OF THE FIRE** ~~If the device is visible and accessible, or, if the device is contained in baggage and flames are visible:~~ ~~a) Re-apply Step 1 to extinguish the flames, if applicable.~~ ~~b) Apply Steps 3 to 5.~~ ~~If smoke is coming from the overhead bin, but the device is not visible or accessible:~~ ~~c) Remove other baggage from the overhead bin to access the affected baggage/item.~~ ~~d) Identify the item.~~ ~~e) Apply Steps 3 to 5.~~ ~~**Caution:**~~ ~~In order to avoid injury from a flash fire, it is not recommended to open the affected baggage when there is any indication of smoke or flames.~~
4.	**REMOVE POWER**
~~3~~5.	**~~DOUSE THE DEVICE (BAGGAGE) WITH~~ POUR WATER (OR OTHER NON-FLAMMABLE LIQUID) ON THE DEVICE (BAGGAGE)** ~~*Note.— Liquid may turn to steam when applied to the hot battery.*~~
6.	**OBTAIN A SUITABLE EMPTY CONTAINER**
47.	**~~WHEN THE DEVICE HAS COOLED~~SUBMERGE THE DEVICE IN WATER (OR OTHER NON-FLAMMABLE LIQUID), IN THE CONTAINER** ~~a) Obtain a suitable empty container.~~ ~~b) Fill the container with enough water (or other non-flammable liquid) to submerge the device.~~ ~~c) Using protective equipment, place the device in the container and completely submerge in water (or other non-flammable liquid).~~ ~~d) Stow and secure (if possible) the container to prevent spillage.~~
8.	**STOW AND SECURE (IF POSSIBLE) THE CONTAINER TO PREVENT SPILLAGE**
~~5~~9.	**MONITOR THE DEVICE AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT**
~~6~~10.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION** ~~a) Apply operator's post-incident procedures.~~

3.3.3 Overheated battery / electrical smell involving a portable electronic device (PED) – no visible ~~fire~~ flame or smoke

Procedures for overheated battery / electrical smell involving a portable electronic device (PED) – no visible ~~fire~~ flame or smoke	
Step	*Cabin crew action*
	If there are signs of fire (smoke, fumes, flames), **APPLY PROCEDURES FOR BATTERY/PED FIRE (SEE 3.3.1)**
1.	**IDENTIFY THE ITEM**
2.	**INSTRUCT THE PASSENGER TO TURN OFF THE DEVICE IMMEDIATELY**
3.	**REMOVE POWER** ~~a) Disconnect the device from the power supply, if safe to do so.~~ ~~b) Turn off in seat power, if applicable.~~ ~~c) Verify that power to the remaining electrical outlets remains off, if applicable.~~ ~~d) Verify that the device remains off for the remainder of the flight.~~ ~~**Caution:**~~ ~~Do not attempt to remove the battery from the device.~~
4.	**INSTRUCT THE PASSENGER TO KEEP THE DEVICE VISIBLE AND MONITOR CLOSELY** ~~**Caution:**~~ ~~Unstable batteries may ignite even after the device is turned off.~~
~~5.~~	~~**IF SMOKE OR FLAMES APPEAR**~~ ~~a) Apply BATTERY / PED FIRE / SMOKE procedures (see 3.3.1).~~
~~6~~5.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION** ~~a) Apply operator's post incident procedures.~~

3.3.4 PORTABLE ELECTRONIC DEVICE (PED) ~~inadvertently crushed or damaged in electrically adjustable~~ fallen into / trapped in a passenger seat – no visible flame or smoke

Procedures for PED ~~inadvertently crushed or damaged in electrically adjustable~~ fallen into / trapped in a passenger seat – no visible flame or smoke	
Step	*Cabin crew action*
	If there are signs of fire (smoke, fumes, flames), **APPLY PROCEDURES FOR BATTERY/PED FIRE (SEE 3.3.1)**
~~1.~~	~~**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS**~~

Procedures for PED ~~inadvertently crushed or damaged in electrically adjustable~~ fallen into / trapped in a passenger seat ~~–~~ no visible flame or smoke	
Step	*Cabin crew action*
~~2~~1.	**OBTAIN INFORMATION FROM THE PASSENGER~~, BY ASKING THE PASSENGER~~** ~~a) To identify the item.~~ ~~b) Where the passenger suspects that the item may have dropped or slipped into.~~ ~~c) If the seat was moved since misplacing the item.~~
~~3~~2.	**RETRIEVE AND USE PROTECTIVE EQUIPMENT~~, IF AVAILABLE~~**
3.	**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS**
4.	**RETRIEVE THE ITEM, IF SAFE TO DO SO** ~~**Caution:**~~ ~~Do not move the seat electrically or mechanically when attempting to retrieve the item.~~
5.	~~**IF SMOKE OR FLAMES APPEAR**~~**MONITOR THE SEAT AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT** ~~a) Apply BATTERY / PED FIRE / SMOKE procedures (see 3.3.1).~~
6.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION** ~~a) Apply operator's post-incident procedures.~~

3.3.5 BATTERY / PORTABLE ELECTRONIC DEVICE (PED) FIRE ON THE FLIGHT DECK

Procedures for battery / PED fire on the flight deck	
Step	*Cabin crew action*
1.	**RECOGNIZE SIGNAL FOR FIRE ON THE FLIGHT DECK**
2.	**APPLY FIREFIGHTING PROCEDURE TO EXTINGUISH FLAMES**
3.	**POUR WATER (OR OTHER NON-FLAMMABLE LIQUID) ON THE DEVICE**
4.	**REMOVE THE DEVICE FROM THE FLIGHT DECK**
5.	**CLOSE THE FLIGHT DECK DOOR**
6.	**APPLY PROCEDURES FOR BATTERY / PED FIRE (see 3.3.1)**
7.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION**

Note.— Procedures presented in this section are not applicable to incidents involving electronic flight bags (EFBs) that cannot be removed from the flight deck (e.g. installed via airworthiness approval).

3.3.~~5~~6 Fire involving dangerous goods

Procedures for fire involving dangerous goods	
Step	*Cabin crew action*
1.	**IDENTIFY THE ITEM** ~~*Note.— It may not be possible to identify the item (source of fire) immediately. In this case, apply Step 2 first, and then attempt to identify it.*~~ ~~**Caution:**~~ ~~In order to avoid injury from a flash fire, it is not recommended to open the affected baggage when there is any indication of smoke or flames.~~
2.	**APPLY FIREFIGHTING PROCEDURE** ~~a) Obtain and use the appropriate fire extinguisher / check use of water.~~ ~~b) Retrieve and use protective equipment, as applicable to the situation.~~ ~~c) Move passengers away from the area, if possible.~~ ~~d) Notify pilot-in-command / other cabin crew members.~~ ~~*Note.— Actions should occur simultaneously in a multi-crew operation.*~~
3.	**MONITOR FOR ANY INDICATION OF-REIGNITION** ~~a) If smoke/flames reappear, repeat Step 2.~~
4.	~~**ONCE THE FIRE HAS BEEN EXTINGUISHED**~~ ~~a) Apply~~ **APPLY PROCEDURES FOR SPILLAGE OR LEAKAGE OF DANGEROUS GOODS** ~~procedures, if required~~**, IF REQUIRED, ONCE THE FIRE HAS BEEN EXTINGUISHED** (see 3.3~~.6~~.7).
5.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION** ~~a) Apply operator's post incident procedures.~~

3.3~~.6~~.7 Spillage or leakage of dangerous goods

Procedures for spillage or leakage of dangerous goods	
Step	*Cabin crew action*
1.	**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS**
2.	**IDENTIFY THE ITEM**
3.	**COLLECT EMERGENCY RESPONSE KIT OR OTHER USEFUL ITEMS**
4.	~~**DON RUBBER GLOVES AND SMOKE HOOD**~~ **RETRIEVE AND USE PROTECTIVE EQUIPMENT**

Procedures for spillage or leakage of dangerous goods	
Step	*Cabin crew action*
5.	**MOVE PASSENGERS AWAY FROM AREA AND DISTRIBUTE WET TOWELS OR CLOTHS**
6.	**PLACE DANGEROUS GOODS ITEM IN POLYETHYLENE BAGS**
7.	**STOW POLYETHYLENE BAGS**
8.	**TREAT AFFECTED SEAT CUSHIONS / COVERS IN THE SAME MANNER AS DANGEROUS GOODS ITEM**
9.	**COVER SPILLAGE ON CARPET / FLOOR**
10.	**~~REGULARLY INSPECT~~ MONITOR ITEMS STOWED AWAY / CONTAMINATED FURNISHINGS**
11.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION** ~~a) Apply operator's post-incident procedures.~~

3.4 AMPLIFIED CABIN CREW PROCEDURES FOR DANGEROUS GOODS INCIDENTS IN THE PASSENGER CABIN DURING FLIGHT

This section consists of amplified cabin crew procedures for dangerous goods incidents in the passenger cabin during flight involving:

a) battery / portable electronic device (PED) fire ~~/ smoke~~ (see 3.4.1);

b) overhead bin battery / portable electronic device (PED) fire ~~/ smoke~~ (see 3.4.2);

c) overheated battery / electrical smell involving a portable electronic device (PED) – no visible ~~fire~~ flame or smoke (see 3.4.3);

d) portable electronic device (PED) ~~inadvertently crushed or damaged in electrically adjustable~~ fallen into / trapped in a passenger seat (see 3.4.4);

e) battery / portable electronic device (PED) fire on the flight deck (see 3.4.5);

~~e~~f) fire involving dangerous goods (see 3.4~~.5~~.6); and

~~f~~g) spillage or leakage of dangerous goods (see 3.4~~.6~~,7).

~~*Note.— Although this guidance material presents sequences of tasks, some of these actions occur simultaneously when carried out by crew members.*~~

3.4.1 Battery / portable electronic device (PED) fire ~~/ smoke~~

Amplified procedures for battery / portable electronic device (PED) fire ~~/ smoke~~	
Step	*Cabin crew action*
1.	**IDENTIFY THE ~~ITEM~~ SOURCE OF THE FIRE** It may not be possible for cabin crew to identify the item (source of fire) right away, especially if the fire has started in a ~~seat pocket or the device is not readily accessible. In this case, firefighting procedures should be applied as a first step. If the item is contained in baggage, the crew's actions would be similar to the actions for a device that is visible or readily accessible~~ passenger bag. Identify the location and any other appropriate details of the hazard. Bring appropriate equipment and protective equipment to the area to assist with finding the source and to prepare for firefighting. ~~**Caution:**~~ ~~In order to avoid injury from a flash fire, it is not recommended to open the affected baggage when there is any indication of smoke or flames. However, in certain situations cabin crew members may assess and deem it necessary to slightly open baggage to allow entry of the extinguishing agent and non-flammable liquid. This should be done with extreme caution and only after donning appropriate protective equipment available on the aircraft.~~

Amplified procedures for battery / portable electronic device (PED) fire ~~/ smoke~~	
Step	*Cabin crew action*
2.	~~**APPLY FIREFIGHTING PROCEDURE**~~**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS** During ~~A~~any occurrence concerning a fire in the cabin, the cabin crew should ~~be notified immediately~~ notify to the pilot-in-command ~~who should be kept~~ immediately and keep the flight crew informed of all actions taken and of the effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each is kept fully informed of the other's actions and intentions. ~~Appropriate firefighting and emergency procedures must be used to deal with any fire. In a multi-cabin crew operation, the actions detailed in the firefighting procedure should be conducted simultaneously. On aircraft operated with only one cabin crew member, the aid of a passenger should be sought in dealing with the situation.~~ ~~Halon, Halon replacement or water extinguisher should be used to extinguish the fire and prevent its spread to additional flammable materials. It is important to wear available protective equipment (such as protective breathing equipment, fire gloves) when fighting a fire.~~ ~~If fire develops, cabin crew should take prompt action to move passengers away from the area involved and, if necessary, provide wet towels or cloths and give instructions for passengers to breathe through them.~~ Minimizing the spreading of smoke and fumes into the flight deck is critical for the continued safe operation of the aircraft, therefore it is essential to keep the flight deck door closed at all times. Crew communication and coordination are of utmost importance. The use of the interphone is the primary means of communication ~~unless the interphone system fails~~ between crew members, unless the interphone system fails.

Amplified procedures for battery / portable electronic device (PED) fire ~~/ smoke~~	
Step	*Cabin crew action*
3.	**APPLY FIREFIGHTING PROCEDURES TO EXTINGUISH FLAMES** a) use appropriate protective equipment; b) use appropriate firefighting equipment; c) extinguish flames; and d) manage passengers and cabin, as required. It is important that cabin crew use protective equipment (such as protective breathing equipment and fire-fighting gloves) when fighting a fire. Cabin crew should use halon, halon replacement, or water to extinguish the flames. This should be accomplished as soon as possible to prevent the flames from spreading to additional flammable materials. Halon and halon replacement fire extinguishers are optimal for the extinguishing of flames or when other nearby materials have become involved in the fire, but do not provide any cooling properties to the battery. It is important to move past this step to the cooling step as soon as possible once flames are gone. If deemed more efficient or expedient, water may be used instead of halon for knocking down small flames and imparting a cooling effect in one step. It is critical that once any flames are extinguished that the cabin crew progress to apply Step 4 (Pour water on the device in place). It is important that cabin crew use protective equipment (such as protective breathing equipment and fire-resistant gloves) when fighting a fire. Cabin crew should move passengers away from the area involved and, if necessary, provide wet towels or cloths and give instructions for passengers to breathe through them. **Caution:** In certain firefighting situations cabin crew may assess and deem it necessary to slightly open baggage to allow entry of the extinguishing agent and non-flammable liquid. To avoid injury from a flash fire, cabin crew should use caution when opening the affected baggage when there is any indication of smoke or flames. This should only be done after donning appropriate protective equipment.

Amplified procedures for battery / portable electronic device (PED) fire ~~/ smoke~~	
Step	*Cabin crew action*
~~3~~4.	**REMOVE POWER** a) Disconnect the device from the power supply, if safe to do so. b) Turn off in-seat power, if applicable. c) Verify that power to the remaining electrical outlets remains off, if applicable. **Caution:** Do not attempt to remove the battery from the device. It is important ~~to~~ that cabin crew instruct the passenger to disconnect the device from the power supply, if it is deemed safe to do so. A battery has a higher likelihood of catching fire due to overheating during or immediately following a charging cycle, although the effects may be delayed for some period of time. By removing the external power supply from the device, it will be assured that additional energy is not being fed to the battery to promote a fire. Cabin crew should turn off the in-seat power to the remaining electrical outlets until it can be assured that a malfunctioning aircraft system does not contribute to additional failures of the passengers' portable electronic devices. Cabin crew should visually check that power to the remaining electrical outlets remains off until the aircraft's system can be determined to be free of faults, if the device was previously plugged in. The removal of power may occur simultaneously to other cabin crew actions (such as obtaining water to pour on the device). Depending on the aircraft type, in-seat power may have to be turned off by the fight crew. ~~Turn off the in-seat power to the remaining electrical outlets until it can be assured that a malfunctioning aircraft system does not contribute to additional failures of the passengers' portable electronic devices.~~ ~~Visually check that power to the remaining electrical outlets remains off until the aircraft's system can be determined to be free of faults, if the device was previously plugged in.~~ ~~The removal of power may occur simultaneously to other cabin crew actions (such as obtaining water to douse the device). Depending on the aircraft type, in-seat power may have to be turned off by the flight crew members.~~ ~~**Caution:**~~ ~~Do not attempt to remove the battery from the device.~~

Amplified procedures for battery / portable electronic device (PED) fire ~~/ smoke~~	
Step	*Cabin crew action*
~~4~~5.	**~~DOUSE THE DEVICE WITH~~ POUR WATER (OR OTHER NON-FLAMMABLE LIQUID) ON THE DEVICE** If the device is smoking but does not show signs of flame, water needs to be applied to cool the device and prevent flames. Use ~~W~~water (or other non-flammable liquid) ~~must be used~~ to cool a battery that has ignited to prevent the spread of heat to other cells in the battery. ~~If water is not available, any non-flammable liquid may be used to cool the device.~~ Pour liquid onto the device until signs of steam and crackling have subsided completely. ~~*Note.* —~~ *Liquid may turn to steam when applied to the hot battery.* The action of pouring water or non-flammable liquid on the device cools the device and can prevent thermal runaway from propagating to nearby cells. It may also lower the risk of a cell that is venting, but not yet in full thermal runaway, from reacting more violently.
~~5.~~	**~~LEAVE THE DEVICE IN ITS PLACE AND MONITOR FOR ANY REIGNITION~~** A battery involved in a fire can reignite and emit flames multiple times as heat is transferred to other cells in the battery. Therefore, cabin crew should ~~the device must be~~ monitor~~ed~~ the device regularly to identify if there is any indication that a fire hazard may still exist. If there is any smoke or indication of fire, ~~the device must be doused with~~ crew should pour more water (or other non-flammable liquid) on the device. Monitor for any indication of reignition and continue to pour water (or other non-flammable liquid) on the device. **Caution:** a) Do not attempt to pick up or move the device until completing this step; batteries may explode or burst into flames without warning. The device ~~must~~ should not be moved if displaying any of the following: flames/flaring, smoke, unusual sounds (such as crackling), debris, or shards of material separating from the device. b) Do not cover or enclose the device as it could cause it to overheat. c) Do not use ice or dry ice to cool the device. Ice or other materials insulate the device, increasing the likelihood that additional battery cells will reach thermal runaway.
6.	**~~WHEN THE DEVICE HAS COOLED (such as APPROXIMATELY 10-15 MINUTES)~~ OBTAIN A SUITABLE EMPTY CONTAINER** ~~The device can be moved with caution following a certain period, once it has cooled down and if there is no evidence of smoke, heat, or if there is a reduction in the crackling or hissing sound usually associated with a lithium battery fire (such as after approximatly10-15 minutes). The waiting period may vary based on the device and its size. The different circumstances (such as types of devices, phase of flight) should be addressed in the operator's training programme.~~

Amplified procedures for battery / portable electronic device (PED) fire ~~/ smoke~~	
Step	*Cabin crew action*
	A suitable empty container~~, such as~~ may include a pot, jug, galley unit or ~~toilet~~lavatory waste bin, ~~must~~or fire containment equipment (only when they are designed to contain water). When selecting a suitable empty container, cabin crew should consider the size of the device to be submerged in it. Cabin crew should select a container which can be filled with enough ~~water or non-flammable~~ liquid to completely submerge the device. ~~It is important to wear available protective equipment (such as protective breathing equipment, fire gloves), when moving any device involved in a fire. Once the device is completely submerged, the container used must be stowed and,~~ ~~if possible, secured to prevent spillage.~~
7.	**PLACE THE DEVICE IN THE CONTAINER AND COMPLETELY SUBMERGE IN WATER (OR OTHER NON-FLAMMABLE LIQUID), USING PROTECTIVE EQUIPMENT** It is important that cabin crew wear protective equipment such as protective breathing equipment and fire-fighting gloves when moving any device involved in a fire. Place the device in the container and pour water or a non-flammable liquid into the container until the device is completely submerged. It is also possible to put the device in the container once the container already contains water. Efforts should be taken to minimize splashing of water in the aircraft when dropping the device in a container that already contains water.
8.	**STOW AND SECURE (IF POSSIBLE) THE CONTAINER TO PREVENT SPILLAGE** Once the device is completely submerged, cabin crew should stow the container and, if possible, secure it to prevent spillage.
~~7~~9.	**MONITOR THE DEVICE AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT** Cabin crew should ~~M~~monitor the device and the surrounding area for the remainder of the flight to verify that the device does not pose further hazard.
~~8~~10.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION** Upon arrival, cabin crew should apply the operator's post-incident procedures. These ~~may~~ should include identifying to ground personnel where the item is stowed and providing ~~all~~ relevant information about the item. Crew need to ~~C~~complete the required documentation, as per operator procedures, so that the operator is ~~notified of the event~~ able to comply with mandatory reporting requirements and can ensure, proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

3.4.2 Overhead bin battery / portable electronic device (PED) fire / smoke

Amplified procedures for overhead bin battery / portable electronic device (PED) fire / smoke	
Step	*Cabin crew action*
1.	~~**APPLY FIREFIGHTING PROCEDURE**~~**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS** During ~~A~~any occurrence concerning a fire in the cabin, the cabin crew should ~~be notified immediately to~~ notify the pilot-in-command ~~who should be kept~~ immediately and keep the flight crew informed of all actions taken and of the effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each is kept fully informed of the other's actions and intentions. ~~Appropriate firefighting and emergency procedures must be used to deal with an overhead bin fire. In a multi-cabin crew operation, the actions detailed in the firefighting procedure should be conducted simultaneously. On aircraft operated with only one cabin crew member, the aid of a passenger should be sought in dealing with the situation.~~ ~~Halon, Halon replacement or water extinguisher should be used to extinguish the fire and prevent its spread to additional flammable materials. It is important to wear available protective equipment (such as protective breathing equipment, fire gloves) when fighting a fire.~~ ~~If fire develops, cabin crew should take prompt action to move passengers away from the area involved and, if necessary, provide wet towels or cloths and give instructions for passengers to breathe through them.~~ Minimizing the spreading of smoke and fumes into the flight deck is critical for the continued safe operation of the aircraft, therefore it is essential to keep the flight deck door closed ~~at all times~~ until the hazard is no longer present. Crew communication and coordination are of utmost importance. The use of the interphone is the primary means of communication between crew members, unless the interphone system fails.

Amplified procedures for overhead bin battery / portable electronic device (PED) fire / smoke	
Step	*Cabin crew action*
2.	**APPLY FIREFIGHTING PROCEDURE TO EXTINGUISH FLAMES** a) use appropriate protective equipment; b) use appropriate firefighting equipment; c) extinguish flames; and d) manage passengers and cabin, as required. It is important that cabin crew use protective equipment (such as protective breathing equipment and fire-fighting gloves) when fighting a fire. Use halon, halon replacement, or water to extinguish the flames. This should be accomplished as soon as possible to prevent the flames from spreading to additional flammable materials. Halon and halon replacement fire extinguishers are optimal for the extinguishing of flames or when other nearby materials have become involved in the fire, but do not provide any cooling properties to the battery. It is important to move past this step to the cooling step as soon as possible once flames are gone. If deemed more efficient or expedient, water may be used instead of halon for knocking down small flames and imparting a cooling effect in one step. It is critical that once any flames are extinguished that the cabin crew progress to apply Step 4 (Pour water on the device in place). Due to the weight and size of some overhead bins, and their opening movement, the cabin crew member who is fighting the fire may require assistance in opening and controlling the overhead bin. When fighting an overhead bin fire, the cabin crew member should position themselves at the opposite end of the overhead bin, where the smoke / flames are visible. This action prevents further spreading embers due to the force of the extinguishing agent as it is discharged and comes into contact with the overhead bin. Cabin crew should take prompt action to move passengers away from the area involved and, if necessary, provide wet towels or cloths and give instructions for passengers to breathe through them. *Note.— If the origin of the fire / smoke cannot be confirmed visually, cabin crew should use the back of the hand to search for hot overhead bin surfaces.* **Caution:** 1) Use the back of the hand and not the palm of the hand to search for hot overhead bin surfaces, because the back of the hand is more sensitive to temperature differences. 2) In certain firefighting situations cabin crew may assess and deem it necessary to slightly open baggage to allow entry of the extinguishing agent and non-flammable liquid. To avoid injury from a flash fire, cabin crew should use caution when opening the affected baggage when there is any indication of smoke or flames. This should only be done after donning appropriate protective equipment.

Amplified procedures for overhead bin battery / portable electronic device (PED) fire / smoke	
Step	*Cabin crew action*
~~2~~3.	**IDENTIFY THE ~~ITEM~~ SOURCE OF THE FIRE** ~~It may not be possible to identify the item right away, especially if the fire has started in the overhead bin and the device is not readily accessible.~~ If the device is visible and accessible or if the device is contained in baggage and flames are visible~~, the firefighting procedures should be applied as a first step.~~: a) reapply Step 2 to extinguish the flames, if applicable; and b) apply Steps 4 to 10. If smoke is coming from the overhead bin, but the device is not visible or accessible, ~~or there is no indication of fire, the firefighting procedures should be applied as a first step. Afterwards, all~~: a) remove other baggage ~~should be removed~~ from the overhead bin ~~with caution until~~ to access the affected baggage/item ~~can be identified.~~; b) ~~Once the item is identified~~identify the item~~,~~; c) apply Steps ~~3~~4 to ~~5~~10. It may not be possible for cabin crew to identify the item (source of fire or smoke) right away, especially if the fire has started in an overhead bin or the device is not readily accessible. ~~**Caution:**~~ ~~In order to avoid injury from a flash fire, it is not recommended to open the affected baggage when there is any indication of smoke or flames. However, in certain situations cabin crew members may assess and deem it necessary to slightly open baggage to allow entry of the extinguishing agent and non-flammable liquid. This should be done with extreme caution and only after donning appropriate protective equipment available on the aircraft.~~

Amplified procedures for overhead bin battery / portable electronic device (PED) fire / smoke	
Step	*Cabin crew action*
~~3~~4.	**~~DOUSE THE DEVICE (BAGGAGE) WITH~~ POUR WATER (OR OTHER NON-FLAMMABLE LIQUID) ON THE DEVICE (BAGGAGE)** If the device is smoking but does not show signs of flame, water needs to be applied to cool the device and prevent flames. Use ~~W~~water (or other non-flammable liquid) ~~must be used~~ to cool a battery that has ignited to prevent the spread of heat to other cells in the battery. ~~If water is not available, any non-flammable liquid may be used to cool the device.~~ Pour liquid onto the baggage or device until signs of steam and crackling have subsided completely. ~~Note.—~~ Liquid may turn to steam when applied to the hot battery. The action of pouring water or non-flammable liquid on the device cools the device and can prevent thermal runaway from propagating to nearby cells. It may also lower the risk of a cell that is venting, but not yet in full thermal runaway, from reacting more violently. A battery involved in a fire can reignite and emit flames multiple times as heat is transferred to other cells in the battery. Therefore, cabin crew should monitor the device regularly to identify if there is any indication that a fire hazard may still exist. If there is any smoke or indication of fire, crew should pour more water (or other non-flammable liquid) on the device. Monitor for any indication of reignition and continue to pour water (or other non-flammable liquid) on the device. Caution: a) Do not attempt to pick up or move the device until completing this step; batteries may explode or burst into flames without warning. The device should not be moved if displaying any of the following: flames/flaring, smoke, unusual sounds (such as crackling), debris, or shards of material separating from the device. b) Do not cover or enclose the device as it could cause it to overheat. c) Do not use ice or dry ice to cool the device. Ice or other materials insulate the device, increasing the likelihood that additional battery cells will reach thermal runaway.
~~4~~5.	**~~WHEN THE DEVICE HAS COOLED~~ OBTAIN A SUITABLE EMPTY CONTAINER** ~~The device should be moved from the overhead bin to prevent a hidden fire from potentially developing. The device can be moved with caution following a certain period, once it has cooled down and if there is no evidence of smoke, heat, or if there is a reduction in the crackling or hissing sound usually associated with a lithium battery fire. The waiting period may vary based on the device and its size. The different circumstances (such as types of devices, phase of flight) should be addressed in the operator's training programme.~~

Amplified procedures for overhead bin battery / portable electronic device (PED) fire / smoke	
Step	*Cabin crew action*
	A suitable empty container~~, such as~~ may include a pot, jug, galley unit or ~~toilet~~lavatory waste bin~~, must~~ or fire containment equipment (only when they are designed to contain water). When selecting a suitable empty container, cabin crew should consider the size of the device to be submerged in it.Cabin crew should select a container which can be filled with enough ~~water or non-flammable~~ liquid to completely submerge the device. ~~It is important to wear available protective equipment (such as protective breathing equipment, fire gloves), when moving any device involved in a fire. Once the device is completely submerged, the container used must be stowed and, if possible, secured to prevent spillage.~~
6.	**PLACE THE DEVICE IN THE CONTAINER AND COMPLETELY SUBMERGE IN WATER (OR OTHER NON-FLAMMABLE LIQUID), USING PROTECTIVE EQUIPMENT** Place device in the container and pour water or a non-flammable liquid in the container until the device is completely submerged. It is also possible to put the device in the container once the device already contains water. Efforts should be taken to minimize splashing of water in the aircraft when dropping the device in a container that already contains water. It is important that cabin crew wear protective equipment (such as protective breathing equipment and firefighting gloves) when moving any device involved in a fire.
7.	**STOW AND SECURE (IF POSSIBLE) THE CONTAINER TO PREVENT SPILLAGE** Once the device is completely submerged, cabin crew should stow the container and, if possible, secure it to prevent spillage.
~~5~~8.	**MONITOR THE DEVICE AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT** Cabin crew should ~~M~~monitor the device and the surrounding area for the remainder of the flight to verify that the device does not pose further hazard.
~~6~~9.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION** Upon arrival, cabin crew should apply the operator's post-incident procedures. These ~~may~~ should include identifying to ground personnel where the item is stowed and providing ~~all~~ relevant information about the item. Crew need to ~~C~~complete the required documentation, as per operator procedures, so that the operator is ~~notified of the event,~~ able to comply with mandatory reporting requirements and can ensure proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

3.4.3 Overheated battery / electrical smell involving a portable electronic device (PED) – no visible ~~fire~~ flame or smoke

Amplified procedures for overheated battery / electrical smell involving a portable electronic device (PED) – no visible ~~fire~~ flame or smoke	
Step	*Cabin crew action*
	If there are signs of fire (smoke, fumes, flames), **APPLY PROCEDURES FOR BATTERY/PED FIRE (SEE 3.4.1)**
1.	**IDENTIFY THE ITEM** Cabin crew should ~~I~~identify the source of overheat or electrical smell~~.~~ or ~~A~~ask the passenger concerned to identify the item.
2.	**INSTRUCT THE PASSENGER TO TURN OFF THE DEVICE IMMEDIATELY** It is important ~~to~~ that cabin crew instruct the passenger to turn off the device immediately and, if possible and safe to do so, to remove the power supply to prevent further overheating or a fire.
3.	**REMOVE POWER** a) Disconnect the device from the power supply, if safe to do so. b) Turn off in-seat power, if applicable. c) Verify that power to the remaining electrical outlets remains off, if applicable. d) Verify that the device remains off for the remainder of the flight **Caution:** Do not attempt to remove the battery from the device. It is important ~~to~~ that cabin crew instruct the passenger ~~or crew member~~ to disconnect the device from the power supply, if it is deemed safe to do so. A battery has a higher likelihood of catching fire due to overheating during or immediately following a charging cycle, although the effects may be delayed for some period of time. By removing the external power supply from the device, it will be assured that additional energy is not being fed to the battery to promote a fire.
	Cabin crew should ~~T~~turn off the in-seat power to the remaining electrical outlets until it can be assured that a malfunctioning aircraft system does not contribute to additional failures of the passengers' portable electronic devices. Cabin crew should ~~V~~visually check that power to the remaining electrical outlets remains off until the aircraft's system can be determined to be free of faults, if the device was previously plugged in. Depending on the aircraft type, in-seat power may have to be turned off by the fight crew.

Amplified procedures for overheated battery / electrical smell involving a portable electronic device (PED) – no visible ~~fire~~ flame or smoke	
Step	*Cabin crew action*
	~~The removal of power may occur simultaneously to other cabin crew actions (such as obtaining water to douse the device). Depending on the aircraft type, in-seat power may have to be turned off by the fight crew members.~~ It is important ~~to~~ that cabin crew verify that the device remains turned off for the duration of the flight. ~~**Caution:**~~ ~~Do not attempt to remove the battery from the device.~~
4.	**INSTRUCT THE PASSENGER TO KEEP THE DEVICE VISIBLE AND MONITOR CLOSELY** The device ~~must~~ should remain visible (not stowed such as in baggage or seat pocket or on a person (pocket)) and should be monitored closely. Unstable batteries may ignite even after the device is turned off. Cabin crew should ~~V~~verify that the device is stowed only for landing.
~~5.~~	~~**IF SMOKE OR FLAMES APPEAR**~~ ~~If smoke or flames appear, apply the BATTERY / PORTABLE ELECTRONIC DEVICE (PED) FIRE / SMOKE procedures (see 3.4.1).~~
~~6~~5.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION** Upon arrival, cabin crew should apply the operator's post-incident procedures. These ~~may~~ should include identifying to ground personnel where the item is stowed and providing ~~all~~ relevant information about the item. Crew need to ~~C~~complete the required documentation, as per operator procedures, so that the operator is ~~notified of the event,~~ able to comply with mandatory reporting requirements, and can ensure proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

3.4.4 Portable electronic device (PED) ~~inadvertently crushed or damaged in electrically adjustable~~ fallen into / trapped in a passenger seat – no visible flame or smoke

~~Due to the design of some electrically adjustable passenger seats, a PED can slip under a seat covering and/or cushion, behind an armrest or down the side of a seat. Inadvertent crushing of the device poses a fire hazard.~~

Amplified procedures for portable electronic device (PED) ~~inadvertently crushed or damaged in electrically adjustable~~ fallen into / trapped in a passenger seat – no visible flame or smoke	
Step	*Cabin crew action*
	If there are signs of flames or smoke, **APPLY PROCEDURES FOR BATTERY/PED FIRE (SEE 3.4.1)**
~~1.~~	**~~NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS~~** ~~Any occurrence concerning a fire hazard in the cabin should be notified immediately to the pilot-in-command who should be kept informed of all actions taken and of the effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each is kept fully informed of the other's actions and intentions.~~
~~2.~~1.	**OBTAIN INFORMATION FROM THE PASSENGER** a) ~~A~~ask the passenger ~~concerned~~ to identify the item~~,~~; b) ~~and~~ Ask where the passenger suspects ~~it~~ that the item may have dropped or slipped into~~, and if the passenger has moved~~ c) Ask if the seat was moved since misplacing the item. Cabin crew should ask the passenger concerned to identify the item, and where the passenger suspects it may have dropped or slipped into, and if the passenger has moved the seat since misplacing the item.
~~3.~~2.	**RETRIEVE AND USE PROTECTIVE EQUIPMENT~~, IF AVAILABLE~~** Due to the design of some passenger seats, a PED can slip under a seat covering and / or cushion, behind an armrest or down the side of a seat. Inadvertent crushing of the device poses a fire hazard. ~~If available, c~~Cabin crew ~~members~~ should don fire-fighting gloves before trying to retrieve the item.
3.	**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS** Any occurrence concerning a fire hazard in the cabin should be notified immediately to the pilot-in-command who should be kept informed of all actions taken and of the effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each is kept fully informed of the other's actions and intentions.

Amplified procedures for portable electronic device (PED) ~~inadvertently crushed or damaged in electrically adjustable~~ fallen into / trapped in a passenger seat – no visible flame or smoke	
Step	*Cabin crew action*
4.	**RETRIEVE THE ITEM, IF SAFE TO DO SO** **Caution:** Do not move the seat electrically or mechanically when attempting to retrieve the item. To prevent crushing of the PED and reduce the potential fire hazard to the device and the surrounding area, cabin crew ~~members~~ and/or the passenger~~s must~~ should not use the electrical or mechanical seat functions in an attempt to retrieve the item. ~~Move~~ Cabin crew should move the passenger and, if applicable, the passenger(s) seated next to the affected seat from the area, to facilitate the search. ~~Do~~ Cabin crew should not move the seat. If the cabin crew ~~member~~ is unable to retrieve the item without moving the seat, it may ~~be necessary~~ need to be retrieved by personnel on the ground, after landing at the next destination. If the item cannot be retrieved, cabin crew should move the passenger to another seat, if available. Cabin crew should turn off the individual in-seat power, if possible to do so. Depending on the aircraft type, in-seat power may have to be turned off by the fight crew.
5.	~~**IF SMOKE OR FLAMES APPEAR**~~ ~~If smoke or flames appear, apply the BATTERY / PORTABLE ELECTRONIC DEVICE (PED) FIRE / SMOKE procedures (see 3.4.1).~~**MONITOR THE SEAT AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT** Cabin crew should monitor the seat and the surrounding area for the remainder of the flight to verify that the device does not pose further hazard.
6.	**APPLY POST-INCIDENT PROCEDURES, AFTER LANDING AT THE NEXT DESTINATION** Upon arrival, cabin crew should apply the operator's post-incident procedures. These ~~may~~ should include identifying to ground personnel where the item is ~~located~~ stowed and providing ~~all~~ relevant information about the item. Crew need to ~~C~~complete the required documentation, as per operator procedures, so that the operator is ~~notified of the event,~~ able to comply with mandatory reporting requirements, and can ensure proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

3.4.5 Battery / portable electronic device (PED) fire on the flight deck

Amplified procedures for battery / portable electronic device (PED) fire on the flight deck	
Step	*Cabin crew action*
1.	**RECOGNIZE SIGNAL FOR FIRE ON THE FLIGHT DECK** a) Receive call out from the flight deck (such as “back up assistance P-E-D!”); b) Retrieve and use protective equipment, as applicable to the situation; c) Obtain the appropriate fire extinguisher; and d) Enter the flight deck. *Note.— Given the urgency of incidents in the flight deck, close coordination with the flight crew is essential, and following flight crew directives can be vital.* The flight crew’s main responsibility during any occurrence is to maintain control of the aircraft. Therefore, removing an item emitting flames or smoke from the flight deck, as soon as possible, is the priority. To do so, flight crew may call upon the cabin crew to assist in the event of flame / smoke on the flight deck. As notifying the cabin crew of the flame / smoke occurrence on the flight deck by interphone may delay the response, the use of the public address (PA) system is considered the preferred method of notification. The flight crew should use phraseology that clearly explains the type of emergency situation to the cabin crew without creating panic amongst the passengers. The first cabin crew member who is ready to act should enter the flight deck.

Amplified procedures for battery / portable electronic device (PED) fire on the flight deck	
Step	*Cabin crew action*
2.	**APPLY FIREFIGHTING PROCEDURE TO EXTINGUISH FLAMES** a) If the item is on fire, in coordination with the flight crew, extinguish the fire. b) Once the fire has been extinguished or the device is not on fire (it may emit visible smoke, or show signs of bulging/overheating), remove it from the flight deck, if possible. c) If the device cannot be moved, pour water (or other non-flammable liquid) on it. The joint action between the flight crew and the cabin crew depends on the location and type of the affected device. The flight crew may have started the appropriate emergency procedures to deal with the fire before the arrival of the cabin crew, including removing the device from any power source. In that case, cabin crew should join the firefighting actions according to the situation. When the decision is taken to fight the fire on the flight deck, in coordination with the flight crew, the cabin crew should use firefighting equipment to extinguish the fire and prevent its spread to additional flammable materials. Halon and halon replacement fire extinguishers are optimal for the extinguishing of flames, but do not provide any cooling properties to the battery. It is critical that once any flames are extinguished that the cabin crew progress to apply Step 4 (Pour water on the device in place). It is important that cabin crew wear protective equipment (such as protective breathing equipment and fire-fighting gloves) when fighting a fire in a confined space, such as the flight deck. **Caution:** In certain firefighting situations (such as to prevent flight crew incapacitation or a loss of control in-flight), crew may assess and deem it necessary to remove the device immediately from the flight deck even if it is still emitting smoke or flames are present. In such case, cabin crew should apply the firefighting procedure in 3.4.1, after the device is removed from the flight deck.
3.	**REMOVE THE DEVICE FROM THE FLIGHT DECK** Once the fire has been extinguished or the device is no longer on fire (even if it is still emitting visible smoke or feels overheated), cabin crew should remove it from the flight deck, if possible. Minimizing the spreading of smoke and fumes in the flight deck is critical for the continued safe operation of the aircraft. If it cannot be moved, cabin crew should use water (or other non-flammable liquid) to cool a battery that has ignited to prevent the spread of heat to other cells in the battery. After the device is removed from the flight deck, the cabin crew should apply the firefighting procedure, as described in 3.4.1, if it is still on fire. Water (or other non-flammable liquid) should be used to cool a battery that has ignited to prevent the spread of heat to other cells in the battery.
4.	**CLOSE THE FLIGHT DECK DOOR** Upon removal of the device, the flight deck door should be maintained closed until the hazard is no longer present. Crew communication and coordination are of utmost importance. The use of the interphone is the primary means of communication unless that system fails.

Amplified procedures for battery / portable electronic device (PED) fire on the flight deck	
Step	*Cabin crew action*
5.	**APPLY PROCEDURES FOR BATTERY / PED FIRE** After the device is removed from the flight deck, apply the BATTERY / PORTABLE ELECTRONIC DEVICE (PED) FIRE procedures (see 3.4.1).
6.	**APPLY POST-INCIDENT PROCEDURES, AFTER LANDING AT THE NEXT DESTINATION** Upon arrival, cabin crew should apply the operator's post-incident procedures. These should include identifying to ground personnel where the item is stowed and providing relevant information about the item. Crew need to complete the required documentation, as per operator procedures, so that the operator is able to comply with mandatory reporting requirements, and can ensure proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

3.4.~~5~~6 Fire involving dangerous goods

Amplified procedures for fire involving dangerous goods	
Step	*Cabin crew action*
1.	**IDENTIFY THE ITEM** Cabin crew should ~~A~~ask the passenger concerned to identify the item. The passenger may be able to give some guidance on the hazard(s) involved and how these could be dealt with. If the passenger can identify the item, refer to Section 4 of this document for the appropriate emergency response drill. It may not be possible for cabin crew to identify the item right away, especially if the source of the fire is unknown or the item is not readily accessible. In this case, cabin crew should apply firefighting procedures ~~should be applied~~ as a first step (Step 2)~~. Once it is possible to do so,~~ and then attempt to identify the item ~~after the fire is under control~~ (Step 1). If the item is contained in baggage, the crew's actions would be similar to the actions for an item that is visible or readily accessible. ~~**Caution:**~~ ~~In order to avoid injury from a flash fire, it is not recommended to open the affected baggage when there is any indication of smoke or flames. However, in certain situations cabin crew members may assess and deem it necessary to slightly open baggage to allow entry of the extinguishing agent and non-flammable liquid. This should be done with extreme caution and only after donning appropriate protective equipment available on the aircraft.~~

Amplified procedures for fire involving dangerous goods	
Step	*Cabin crew action*
2.	**APPLY ~~THE~~ FIREFIGHTING PROCEDURE** a) Apply communication procedures. b) Use appropriate firefighting equipment and protective equipment, as required. c) Fight fire. d) Manage passengers and cabin, as required. During ~~A~~any occurrence concerning a fire in the cabin, the cabin crew should ~~be notified immediately to~~ notify the pilot-in-command immediately ~~who should be kept~~ and keep the flight crew informed of all actions taken and of the effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each is kept fully informed of the other's actions and intentions. The following is moved from the last paragraph of this step Minimizing the spreading of smoke and fumes into the flight deck is critical for the continued safe operation of the aircraft, therefore it is essential to keep the flight deck door closed ~~at all times~~ until the hazard is no longer present. Crew communication and coordination are of utmost importance. The use of the interphone is the primary means of communication between crew members, unless the interphone system fails. Appropriate firefighting ~~and emergency~~ procedures ~~must~~ should be used to deal with any fire. ~~In a multi-cabin crew operation, the actions detailed in the firefighting procedure should be conducted simultaneously. On aircraft operated with only one cabin crew member, the aid of a passenger should be sought in dealing with the situation.~~ Cabin crew should use firefighting equipment to extinguish the fire and prevent its spread to additional flammable materials. ~~In general,~~Cabin crew should not use water ~~should not be used~~ on a spillage or when fumes are present since it may spread the spillage or increase the rate of fuming. Consideration should also be given to the possible presence of electrical components when using water extinguishers. It is important that cabin crew use protective equipment (such as protective breathing equipment and fire-fighting gloves/oven gloves), as required, when fighting a fire. If fire develops, cabin crew should take prompt action to move passengers away from the area involved and, if necessary, provide wet towels or cloths and give instructions for passengers to breathe through them.

Amplified procedures for fire involving dangerous goods	
Step	*Cabin crew action*
	The following is moved to the end of the first paragraph after the letter list of this step. ~~Minimizing the spreading of smoke and fumes into the flight deck is critical for the continued safe operation of the aircraft, therefore it is essential to keep the flight deck door closed at all times. Crew communication and coordination are of utmost importance. The use of the interphone is the primary means of communication unless the interphone system fails.~~ **Caution:** In certain firefighting situations, cabin crew may assess and deem it necessary to slightly open baggage to allow entry of the extinguishing agent and non-flammable liquid. In order to avoid injury from a flash fire, cabin crew should use caution when opening the affected baggage when there is any indication of smoke or flames. This should only be done after donning appropriate protective equipment.
3.	**MONITOR FOR ANY INDICATION OF REIGNITION** ~~Monitor the area regularly to identify if there is any indication that a fire hazard may still exist. If there is any smoke or indication of fire, continue to apply the firefighting procedure.~~ If smoke or flames reappear, cabin crew should repeat Step 2.
4.	**APPLY PROCEDURES FOR SPILLAGE OR LEAKAGE OF DANGEROUS GOODS, IF REQUIRED, ONCE THE FIRE HAS BEEN EXTINGUISHED** In the event of a fire involving dangerous goods, cabin crew may need to apply the SPILLAGE OR LEAKAGE INVOLVING DANGEROUS GOODS procedures (see 3.4.~~6~~7) ~~may need to be applied~~ once the fire has been extinguished.
5.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION** Upon arrival, cabin crew should apply the operator's post-incident procedures. These may include identifying to ground personnel where the item is stowed and providing all information about the item. Crew should ~~C~~complete the required documentation, as per operator procedures, so that the operator is notified of the event, proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

3.4.~~6~~.7 Spillage or leakage of dangerous goods

Amplified procedures for spillage or leakage of dangerous goods	
Step	*Cabin crew action*
1.	**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS** During ~~A~~any ~~incident~~ occurrence concerning dangerous goods, the cabin crew should ~~be notified immediately to~~ notify the pilot-in-command immediately ~~who should be kept~~ and keep the flight crew informed of all actions taken and of ~~their~~ the effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each is kept fully informed of the other's actions and intentions. Minimizing the spreading of smoke and fumes into the flight deck is critical for the continued safe operation of the aircraft, therefore it is essential to keep the flight deck door closed at all times until the hazard is no longer present. Crew communication and coordination are of utmost importance. The use of the interphone is the primary means of communication between crew members, unless the interphone system fails.
2.	**IDENTIFY THE ITEM** Cabin crew should ~~A~~ask the passenger concerned to identify the item ~~and indicate its potential hazards~~. The passenger may be able to give some guidance on the hazard(s) involved and how these could be dealt with. If the passenger can identify the item, refer to Section 4 of this document for the appropriate emergency response drill. ~~On aircraft with only one cabin crew member, consult with the pilot-in-command as to whether the aid of a passenger should be sought in dealing with the incident.~~
3.	**COLLECT EMERGENCY RESPONSE KIT OR OTHER USEFUL ITEMS** Cabin crew should ~~C~~collect emergency response kit, if provided, or collect for use in dealing with the spillage or leakage: ~~—~~a) ~~a~~A supply of paper towels or newspapers or other absorbent paper or absorbent fabric (e.g. seat cushion covers, head rest protectors)~~;~~. ~~—~~b) ~~oven —~~Rubber gloves or fire-resistant gloves/oven gloves covered by polyethylene bags~~, if available;~~. ~~—~~c) ~~a~~At least two large polyethylene waste bin bags~~; and~~. ~~—~~d) ~~a~~At least three smaller polyethylene bags, such as those used for duty-free or bar sales or, if none available, airsickness bags.

Amplified procedures for spillage or leakage of dangerous goods	
Step	*Cabin crew action*
4.	~~**DON RUBBER GLOVES AND SMOKE HOOD**~~**RETRIEVE AND USE PROTECTIVE EQUIPMENT** It is important that cabin crew use protective equipment (such as protective breathing equipment, rubber gloves or fire-resistant gloves/oven gloves covered by polyethylene bags) when handling a spillage or leakage of dangerous goods. ~~The~~ Cabin crew should always protect their hands ~~should always be protected~~ before touching suspicious packages or items. ~~Fire-resistant gloves or oven gloves covered by polyethylene bags are likely to give suitable protection.~~ ~~Gas-tight breathing equipment should always be worn when attending to an incident involving smoke, fumes or fire.~~
5.	**MOVE PASSENGERS AWAY FROM AREA AND DISTRIBUTE WET TOWELS OR CLOTHS** The use of therapeutic oxygen bottles or the passenger drop-out oxygen system to assist passengers in a smoke- or fume-filled passenger cabin should not be considered since considerable quantities of fumes or smoke would be inhaled through the valves or holes in the masks. A more effective aid to passengers in a smoke- or fume-filled environment would be the use of a wet towel or cloth held over the mouth and nose. A wet towel or cloth aids in filtering and is more effective at doing this than a dry towel or cloth. Cabin crew should take prompt action if smoke or fumes develop and move passengers away from the area involved and, if possible, provide wet towels or cloths and give instructions to breathe through them.
6.	**PLACE DANGEROUS GOODS ITEM IN POLYETHYLENE BAGS** ~~*Note.*~~ — In the case of a spill of known or suspected dangerous goods in powder form, cabin crew should: — a) L~~l~~eave everything undisturbed.~~;~~ — b) ~~d~~Do not use fire agent or water~~;~~. — c) C~~c~~over area with polyethylene or other plastic bags and blankets~~;~~. — d) K~~k~~eep area isolated until after landing.

Amplified procedures for spillage or leakage of dangerous goods	
Step	*Cabin crew action*
	With emergency response kit If it is ~~absolutely~~ certain that the item will not create a problem, the decision may be made not to move it. In most circumstances, however, it will be better to move the item, and this should be done as suggested below. Cabin crew should ~~P~~place the item in a polyethylene bag as follows: —a) ~~p~~Prepare two bags by rolling up the sides and placing them on the floor~~;~~. —b) ~~p~~Place the item inside the first bag with the closure of the item, or the point from which it is leaking from its container, at the top~~;~~. —c) ~~t~~Take off the rubber gloves while avoiding skin contact with any contamination on them~~;~~. —d) ~~p~~Place the rubber gloves in the second bag~~;~~. —e) ~~c~~Close the first bag while squeezing out the excess air~~;~~. —f) ~~t~~Twist the open end of the first bag and use a bag tie to tie it sufficiently tight to be secure but not so tight that pressure equalization cannot take place~~;~~. —g) ~~p~~Place the first bag (containing the item) in the second bag, which already contains the rubber gloves and secure the open end in the same manner as that used for the first bag. **With no emergency response kit** Cabin crew should ~~P~~pick up the item and place it in a polyethylene bag. They should ~~E~~ensure the receptacle containing the dangerous goods is kept upright or the area of leakage is at the top. Using paper towels, newspaper, etc., cabin crew should mop up the spillage, after having ascertained there will be no reaction between what is to be used to mop up and the dangerous goods. They should ~~P~~place the soiled towels, etc., in another polyethylene bag. Cabin crew should ~~P~~place the rubber gloves and bags used to protect the hands either in a separate small polyethylene bag or with the soiled towels. If extra bags are not available, cabin crew should place the towels, rubber gloves, etc., in the same bag as the item. They should ~~E~~expel excess air from the bags and close tightly so as to be secure but not so tight that pressure equalization cannot take place.
7.	**STOW POLYETHYLENE BAGS** If there is a catering or bar box on board, cabin crew should empty any contents and place the box on the floor, with the door upward. They should ~~P~~place the bag(s) containing the item and any soiled towels, etc., in the box and close the door. Cabin crew should ~~T~~take the box or, if there is no box, the bag(s) to a position as far away as possible from the flight deck and passengers. If a galley or ~~toilet~~ lavatory is fitted, cabin crew should consider taking the box or bag(s) there, unless it is close to the flight deck. Cabin crew should ~~U~~use a rear galley or ~~toilet~~ lavatory wherever possible~~,~~ but ~~do~~ should not place the box or bag(s) against the pressure bulkhead or fuselage wall. If a galley is used, the box or bag(s) can be stowed in an empty waste bin container. If a ~~toilet~~ lavatory is used, the box can be placed on the floor or the bag(s) stowed in an empty waste container. The ~~toilet~~ lavatory door should be locked from the outside. In a pressurized aircraft, if a toilet is used, any fumes will be vented away from passengers. However, if the aircraft is unpressurized there may not be positive pressure in a toilet to prevent fumes from entering the passenger cabin.

Amplified procedures for spillage or leakage of dangerous goods	
Step	*Cabin crew action*
	Cabin crew should ~~E~~ensure when moving a box that the opening is kept upward or when moving a bag that either the receptacle containing the dangerous goods is kept upright or the area of leakage is kept at the top. Wherever the box or bag(s) have been located, cabin crew should wedge them firmly in place to prevent them from moving and to keep the item upright. They should ~~E~~ensure that the position of the box or bags will not impede disembarkation from the aircraft.
8.	**TREAT AFFECTED SEAT CUSHIONS / COVERS IN THE SAME MANNER AS DANGEROUS GOODS ITEM** Cabin crew should remove ~~S~~seat cushions, seat backs or other furnishings which have been contaminated by a spillage ~~should be removed~~ from their fixtures and place~~d~~ them in a large bin bag or other polyethylene bag, together with any bags used initially to cover them. ~~They~~ Cabin crew should ~~be~~ stow~~ed~~ them away in the same manner as the dangerous goods item causing the incident.
9.	**COVER SPILLAGE ON CARPET / FLOOR** Cabin crew should ~~C~~cover any spillage on the carpet or furnishings with a waste bag or other polyethylene bags, if available. If not, cabin crew should use airsickness bags opened out so that the plastic side covers the spillage or use the plastic covered emergency information cards. If possible, cabin crew should roll up ~~C~~carpet which has been contaminated by a spillage and which is still causing fumes despite being covered~~, should be rolled up, if possible,~~ and place~~d~~ it in a large bin bag or other polyethylene bag. ~~It~~ Cabin crew should ~~be~~ place~~d~~ it in a waste bin and stow~~ed~~ it, when possible, either in the rear ~~toilet~~ lavatory or rear galley. If the carpet cannot be removed it should remain covered by a large bin bag or polyethylene bags, etc., and additional bags should be used to reduce the fumes.
10.	~~**REGULARLY INSPECT**~~ **MONITOR ITEMS STOWED AWAY / CONTAMINATED FURNISHINGS** Cabin crew should monitor ~~A~~any dangerous goods, contaminated furnishings or equipment which have been removed and stowed away or covered ~~for safety should be subject to regular inspection~~.

Amplified procedures for spillage or leakage of dangerous goods	
Step	*Cabin crew action*
11.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION** Upon arrival, cabin crew should apply the operator's post-incident procedures. These may include identifying to ground personnel where the item is stowed and providing all information about the item. Crew should ~~C~~complete the required documentation, as per operator procedures, so that the operator is notified of the event, proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

APPENDIX B

REVISIONS TO AMENDMENTS TO DOC 9481 THAT WERE DEVELOPED BY THE ICAO CABIN SAFETY GROUP AND PRESENTED TO DGP/29

Section 3

EXAMPLES OF DANGEROUS GOODS INCIDENT PROCEDURES

Operators should use these example procedures to develop specific procedures that take into account the type of aircraft, type of operation, and available emergency response equipment. A risk-based approch should be used to support the development of the specific procedures.

Note 1.— The terms fire, smoke, fumes and flames are referred to throughout these procedures. When "fire" is referred to on its own, it is intended to capture any of the other events. When "smoke", "fumes" or "flames' are specifically referred to, it is intended to highlight that specific hazard.

Note 2.— The following procedures are composed of numbered steps. In some cases, the steps are sequential, while in others the steps can occur simultaneously, by one or more crew members, or in a different order. Operators must consider the specifics of their operation before adapting them into their own procedures.

3.1 FLIGHT CREW PROCEDURES FOR DANGEROUS GOODS INCIDENTS

Step	*Flight crew action*
1.	**FOLLOW THE APPROPRIATE AIRCRAFT EMERGENCY PROCEDURES FOR ~~FIRE OR~~ SMOKE, FUMES or FLAME REMOVAL**
2.	**NO SMOKING SIGN ON**
3.	**CONSIDER LANDING AS SOON AS POSSIBLE**
4.	**CONSIDER TURNING OFF NON-ESSENTIAL ELECTRICAL POWER**
5.	**DETERMINE SOURCE OF SMOKE / FUMES / ~~FIRE~~FLAMES**
6.	**FOR DANGEROUS GOODS INCIDENTS IN THE PASSENGER CABIN, SEE CABIN CREW PROCEDURES AND COORDINATE COCKPIT / CABIN CREW ACTIONS**
7.	**DETERMINE EMERGENCY RESPONSE DRILL CODE**
8.	**USE GUIDANCE FROM AIRCRAFT EMERGENCY RESPONSE DRILLS CHART TO HELP DEAL WITH INCIDENT**

Step	*Flight crew action*
9.	**IF THE SITUATION PERMITS, NOTIFY ATC OF THE DANGEROUS GOODS BEING CARRIED**
After landing	
1.	**DISEMBARK PASSENGERS AND CREW BEFORE OPENING ANY CARGO COMPARTMENT DOORS**
2.	**INFORM GROUND PERSONNEL / EMERGENCY SERVICES OF NATURE OF ITEM AND WHERE STOWED**
3.	**MAKE APPROPRIATE ENTRY IN MAINTENANCE LOG**

3.2 AMPLIFIED FLIGHT CREW PROCEDURES FOR DANGEROUS GOODS INCIDENTS

Amplified flight crew procedures for dangerous goods incidents	
Step	*Flight crew Aaction*
1.	**FOLLOW THE APPROPRIATE AIRCRAFT EMERGENCY PROCEDURES FOR FIRE OR SMOKE, FUMES, OR FLAMES REMOVAL** (self-explanatory)
2.	**NO SMOKING SIGN ON** A sSmoking ban should be introduced prohibited when fumes or vapours are present and be continued for the remainder of the flight.
3.	**CONSIDER LANDING AS SOON AS POSSIBLE** Because of the difficulties and possibly disastrous consequences of any dangerous goods incident, consideration should be given to landing as soon as possible. The decision to land at the nearest suitable aerodrome should be made early rather than late, when an incident may have developed to a very critical point, severely restricting operational flexibility.
4.	**CONSIDER TURNING OFF NON-ESSENTIAL ELECTRICAL POWER** As the incident may be caused by electrical problems or as electrical systems may be affected by any incident, and particularly as firefighting activities, etc., may damage electric systems, turn off all non-essential electrical items. Retain power only to those instruments, systems and controls necessary for the continued safety of the aircraft. Do not restore power until it is positively safe to do so.
5.	**DETERMINE SOURCE OF SMOKE / FUMES / FIRE FLAMES** The source of any smoke / fumes / fire may be difficult to determine. Effective firefighting or containment procedures can best be accomplished when the source of the incident is identified.

Amplified flight crew procedures for dangerous goods incidents	
Step	*Flight crew Aaction*
6.	**FOR DANGEROUS GOODS INCIDENTS IN THE PASSENGER CABIN, SEE CABIN CREW PROCEDURES AND COORDINATE COCKPIT / CABIN CREW ACTIONS** Incidents in the passenger cabin should be dealt with by the cabin crew using the appropriate procedures. It is essential that the cabin crew and the flight crew coordinate their actions and that each be kept fully informed of the other's actions and intentions.
7.	**DETERMINE EMERGENCY RESPONSE DRILL CODE** When the item has been identified, the corresponding entry on the pilot-in-command's dangerous goods notification form should be found. The applicable emergency response drill code may be given on the notification form, or if not given, can be found by noting the proper shipping name or the UN number on the notification form and using the alphabetical or numerical list of dangerous goods. If the item causing the incident is not listed on the notification form, an attempt should be made to determine the name or the nature of the substance. The alphabetical list can then be used to determine the emergency response drill code. *Note.— The alphabetical and numerical lists referred to are those in Section 4 of this document.*
8.	**USE GUIDANCE FROM AIRCRAFT EMERGENCY RESPONSE DRILLS CHART TO HELP DEAL WITH INCIDENT** The drill code assigned to an item of dangerous goods consists of a number plus one or two letters. Referring to the chart of emergency response drills, each drill number corresponds to a line of information concerning the hazard posed by that substance and guidance on the preferable action that should be taken. The drill letter is shown separately on the drill chart; it indicates other possible hazards of the substance. In some cases, the guidance given by the drill number may be further refined by the information given by the drill letter.
9.	**IF THE SITUATION PERMITS, NOTIFY ATC OF THE DANGEROUS GOODS BEING CARRIED** If an in-flight emergency occurs and the situation permits, the pilot-in-command should inform the appropriate air traffic services unit of the dangerous goods on board the aircraft. Wherever possible this information should include the proper shipping name and/or UN number, the class/division and for Class 1 the compatibility group, any identified subsidiary hazard(s), the quantity and the location on board the aircraft. When it is not considered possible to include all the information, those parts thought most relevant in the circumstances should be given.

Amplified flight crew procedures for dangerous goods incidents	
Step	*Flight crew Aaction*
After landing	
1.	**DISEMBARK PASSENGERS AND CREW BEFORE OPENING ANY CARGO COMPARTMENT DOORS** Even if it has not been necessary to complete an emergency evacuation after landing, passengers and crew should disembark before any attempt is made to open the cargo compartment doors and before any further action is taken to deal with a dangerous goods incident. The cargo compartment doors should be opened with the emergency services in attendance.
2.	**INFORM GROUND PERSONNEL / EMERGENCY SERVICES OF NATURE OF ITEM AND WHERE STOWED** Upon arrival, take the necessary steps to identify to the ground staff where the item is stowed. Pass on by the quickest available means all information about the item including, when appropriate, a copy of the notification to pilot-in-command.
3.	**MAKE APPROPRIATE ENTRY IN MAINTENANCE LOG** An entry should be made in the maintenance log that a check needs to be carried out to ensure that any leakage or spillage of dangerous goods has not damaged the aircraft structure or systems and that some aircraft equipment (such as fire extinguishers, emergency response kit) may need replenishing or replacing.

. . .

3.3 CABIN CREW PROCEDURES FOR DANGEROUS GOODS INCIDENTS IN THE PASSENGER CABIN DURING FLIGHT

This section consists of cabin crew procedures for dangerous goods incidents in the passenger cabin during flight involving:

a) battery / portable electronic device (PED) fire ~~/ smoke~~ (see 3.3.1);

b) overhead bin battery / portable electronic device (PED) fire ~~/ smoke~~ (see 3.3.2);

c) overheated battery / electrical smell involving a portable electronic device (PED) ~~—~~ no visible ~~fire~~flame or smoke (see 3.3.3);

~~—~~d) PED fallen into / trapped in a passenger seat (see 3.3.4);

~~—~~e) battery / portable electronic device (PED) fire ~~/ smoke~~ on the flight deck (see 3.3.5);

~~f) battery / portable electronic device (PED) fire / smoke when fire containment equipment is carried on board aircraft (see 3.3.6);~~

~~g~~ f) fire involving dangerous goods (see 3.3.~~7~~6); and

~~h~~g)spillage or leakage of dangerous goods (see 3.3.~~8~~7)

Note~~.~~ 1~~—~~.— Although this guidance material presents sequences of tasks, some of these actions occur simultaneously when carried out by crew members in a multi-cabin crew operation.

Note~~.~~ 2~~—~~.— The operator should ensure its aircraft are equipped with appropriate firefighting and protective equipment for use by crew members.

~~*Note. 3—*~~ *Note 3.— The operator should ensure the crew is trained to use all firefighting and protective equipment including the donning and removal of protective equipment. Firefighting procedures should include precautions for the safety of the crew member(s) involved. These should include the correct use of protective equipment that is appropriate and relevant to the immediate risks presented by the stage to which the fire or thermal runaway has progressed. Unprotected firefighting should be minimized where possible.*

Note 4.— In a single cabin crew member operation, some of the actions listed in this section should be carried out with the assistance of other persons (e.g~~.~~., able-bodied passengers). The operating cabin crew member should assign those persons to communicate with the flight crew and provide back-up, while the cabin crew member fights the fire.

~~*Note. 4— Although this guidance refers to passenger PEDs, procedures are also applicable to crew member PEDs.*~~

Note 5.— The terms fire, smoke, fumes and flames are referred to throughout these procedures. When "fire" is referred to on its own, it is intended to capture any of the other events. When "smoke", "fumes" or "flames' are specifically referred to, it is intended to highlight that specific hazard.

3.3.1 Battery / portable electronic device (PED) fire ~~/ smoke~~

Procedures for battery / portable electronic device (PED) fire ~~/ smoke~~	
Step	*Cabin crew action*
1.	**IDENTIFY THE ~~ITEM~~SOURCE OF THE FIRE**
~~2.~~	**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS**
~~2~~3.	**APPLY FIREFIGHTING PROCEDURE TO EXTINGUISH FLAMES**
~~3~~4.	**REMOVE POWER**
~~4~~5.	**~~LEAVE THE DEVICE IN ITS PLACE AND~~ POUR WATER (OR OTHER NON-FLAMMABLE LIQUID) ON THE DEVICE**
~~5.~~	**~~MONITOR FOR ANY INDICATION OF REIGNITION AND CONTINUE TO POUR WATER (OR OTHER NON-FLAMMABLE LIQUID) ON THE DEVICE~~**
~~6.~~	**~~WAIT UNTIL THE DEVICE HAS COOLED~~**
~~7~~6.	**OBTAIN A SUITABLE EMPTY CONTAINER**
~~8.~~	**~~FILL THE CONTAINER WITH ENOUGH WATER (OR OTHER NON-FLAMMABLE LIQUID) TO SUBMERGE THE DEVICE~~**
~~9~~7.	**~~PLACE~~SUBMERGE THE DEVICE IN ~~THE CONTAINER AND COMPLETELY SUBMERGE IN~~ WATER (OR OTHER NON-FLAMMABLE LIQUID~~), USING PROTECTIVE EQUIPMENT~~) IN THE CONTAINER**
~~10~~8.	**STOW AND SECURE (IF POSSIBLE) THE CONTAINER TO PREVENT SPILLAGE**
~~11~~9.	**MONITOR THE DEVICE AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT**
~~12~~10.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION**

3.3.2 Overhead bin battery / portable electronic device (PED) fire ~~/ smoke~~

~~Procedures for overhead~~Overhead bin battery / portable electronic device (PED) fire ~~/ smoke~~	
Step	*Cabin crew action*
1.	**~~APPLY FIREFIGHTING PROCEDURE~~NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS**
2.	**~~IDENTIFY THE ITEM~~APPLY FIREFIGHTING PROCEDURE TO EXTINGUISH FLAMES**
3.	**~~LEAVE THE DEVICE IN ITS PLACE AND POUR WATER (OR OTHER NON-FLAMMABLE LIQUID) ON THE DEVICE (BAGGAGE)~~IDENTIFY THE SOURCE OF THE FIRE**

~~Procedures for overhead~~Overhead bin battery / portable electronic device (PED) fire ~~/ smoke~~	
Step	*Cabin crew action*
4.	~~MONITOR FOR ANY INDICATION OF REIGNITION AND CONTINUE TO POUR WATER (OR OTHER NON-FLAMMABLE LIQUID) ON THE DEVICE~~REMOVE POWER
5.	~~WAIT UNTIL~~POUR WATER (OR OTHER NON-FLAMMABLE LIQUID) ON THE DEVICE ~~HAS COOLED~~(BAGGAGE)
6.	OBTAIN A SUITABLE EMPTY CONTAINER
~~7.~~	~~FILL THE CONTAINER WITH ENOUGH WATER (OR OTHER NON-FLAMMABLE LIQUID) TO SUBMERGE THE DEVICE~~
~~8~~7.	~~PLACE~~SUBMERGE THE DEVICE IN ~~THE CONTAINER AND COMPLETELY SUBMERGE IN~~ WATER (OR OTHER NON-FLAMMABLE LIQUID), ~~USING PROTECTIVE EQUIPMENT~~IN THE CONTAINER
~~9~~8.	STOW AND SECURE (IF POSSIBLE) THE CONTAINER TO PREVENT SPILLAGE
~~10~~9.	MONITOR THE DEVICE AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT
~~11~~10.	APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION

3.3.3 Overheated battery / electrical smell involving a portable electronic device (PED) ~~—~~ no visible ~~fire~~flame or smoke

Procedures for overheated battery / electrical smell involving a portable electronic device (PED) ~~—~~ no visible ~~fire~~flame or smoke	
Step	*Cabin crew action*
	If there are signs of fire (smoke, fumes, flames), **APPLY PROCEDURES FOR BATTERY/PED FIRE (SEE 3.3.1)**
1.	IDENTIFY THE ITEM
2.	INSTRUCT THE PASSENGER TO TURN OFF THE DEVICE IMMEDIATELY
3.	REMOVE POWER
4.	INSTRUCT THE PASSENGER TO KEEP THE DEVICE VISIBLE AND MONITOR CLOSELY
~~5.~~	~~APPLY PROCEDURES FOR BATTERY / PED FIRE / SMOKE IF SMOKE OR FLAMES APPEAR~~
~~6~~5.	APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION

3.3.4 PORTABLE ELECTRONIC DEVICE (PED) fallen into / trapped in a passenger seat – no visible flame or smoke

Procedures for PED fallen into / trapped in a passenger seat – no visible flame or smoke	
Step	*Cabin crew action*
	If there are signs of fire (smoke, fumes, flames), **APPLY PROCEDURES FOR BATTERY/PED FIRE (SEE 3.3.1)**
1.	**OBTAIN INFORMATION FROM THE PASSENGER ~~BY ASKING THE PASSENGER~~**
2.	**RETRIEVE AND USE PROTECTIVE EQUIPMENT**
3.	**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS**
4.	**RETRIEVE THE ITEM, IF SAFE TO DO SO**
~~5.~~	**~~APPLY PROCEDURES FOR BATTERY / PED FIRE / SMOKE IF SMOKE OR FLAMES APPEAR~~**
~~6~~5.	**MONITOR THE SEAT AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT.**
~~7~~6.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION**

3.3.5 Battery / portable electronic device (PED) fire ~~/ smoke~~ on the flight deck

Procedures for battery / ~~portable electronic device (~~PED~~)~~ fire ~~/ smoke~~ on the flight deck	
Step	*Cabin crew action*
1.	**RECOGNIZE SIGNAL FOR FIRE ~~/ SMOKE~~ ON THE FLIGHT DECK**
2.	**APPLY FIREFIGHTING PROCEDURE TO EXTINGUISH FLAMES**
3.	**POUR WATER (OR OTHER NON-FLAMMABLE LIQUID) ON THE DEVICE**
~~3~~4.	**REMOVE THE DEVICE FROM THE FLIGHT DECK**
4~~5~~.	**CLOSE THE FLIGHT DECK DOOR**
~~5~~6.	**APPLY PROCEDURES FOR BATTERY / PED FIRE ~~/ SMOKE IF SMOKE OR FLAMES APPEAR~~(see 3.3.1)**
~~6~~7.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION**

Note.— Procedures presented in this section are not applicable to incidents involving electronic flight bags (EFBs) that cannot be removed from the flight deck (e.g. installed via airworthiness approval).

Text is proposed for inclusion in Section 2.2 in lieu of adding the following to Section 3

~~**3.3.6 Procedures for battery / portable electronic device (PED) fire / smoke when fire containment equipment is carried on board aircraft**~~

~~Due to the quantity and diversity of existing fire containment products available to operators, it is not possible to design a procedure that encompasses all products. Therefore, this section provides overarching guidance for the use of such equipment. The operator should develop detailed procedures based on the original equipment manufacturer (OEM) instructions. If carried on board the aircraft, one of the fire containment equipment should be located in the flight deck. Additional fire containment should be carried in the cabin. They should be placed in a suitable location(s) that is easily accessible by the cabin crew. When operating multi-deck aircraft, the operator should assess the need for additional fire containment equipment on each deck. Cabin crew members should use the equipment following the OEM's instructions, which should be incorporated in the cabin crew operations manual (CCOM). Cabin crew members should be drilled and capable in the use of the specific fire containment equipment carried on board the operator's aircraft.~~

~~*Note.— Fire containment equipment may not be suitable for all types of PEDs, due to size and shape.*~~

3.3.~~7~~6 Fire involving dangerous goods

Procedures for fire involving dangerous goods	
Step	*Cabin crew action*
1.	**IDENTIFY THE ITEM**
2.	**APPLY FIREFIGHTING PROCEDURE**
3.	**MONITOR FOR ANY INDICATION OF REIGNITION**
4.	**APPLY PROCEDURES FOR SPILLAGE OR LEAKAGE OF DANGEROUS GOODS, IF REQUIRED, ONCE THE FIRE HAS BEEN EXTINGUISHED** (see 3.3.7).
5.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION**

3.3.~~8~~7 Spillage or leakage of dangerous goods

Procedures for spillage or leakage of dangerous goods	
Step	*Cabin crew action*
1.	**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS**

Procedures for spillage or leakage of dangerous goods	
Step	*Cabin crew action*
2.	**IDENTIFY THE ITEM**
3.	**COLLECT EMERGENCY RESPONSE KIT OR OTHER USEFUL ITEMS**
4.	**RETRIEVE AND USE PROTECTIVE EQUIPMENT**
5.	**MOVE PASSENGERS AWAY FROM AREA AND DISTRIBUTE WET TOWELS OR CLOTHS**
6.	**PLACE DANGEROUS GOODS ITEM IN POLYETHYLENE BAGS**
7.	**STOW POLYETHYLENE BAGS**
8.	**TREAT AFFECTED SEAT CUSHIONS / COVERS IN THE SAME MANNER AS DANGEROUS GOODS ITEM**
9.	**COVER SPILLAGE ON CARPET / FLOOR**
10.	**MONITOR ITEMS STOWED AWAY / CONTAMINATED FURNISHINGS**
11.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION**

3.4 AMPLIFIED CABIN CREW PROCEDURES FOR DANGEROUS GOODS INCIDENTS IN THE PASSENGER CABIN DURING FLIGHT

This section consists of amplified cabin crew procedures for dangerous goods incidents in the passenger cabin during flight involving:

a) battery / portable electronic device (PED) fire ~~/ smoke~~ (see 3.4.1);

b) overhead bin battery / portable electronic device (PED) fire ~~/ smoke~~ (see 3.4.2);

c) overheated battery / electrical smell involving a portable electronic device (PED) ~~–~~ no visible ~~fire~~flame or smoke (see 3.4.3);

d) portable electronic device (PED) fallen into / trapped in a passenger seat (see 3.4.4);

e) battery / portable electronic device (PED) fire ~~/ smoke~~ on the flight deck (see 3.4.5);

f) fire involving dangerous goods (see 3.4.6); and

g) spillage or leakage of dangerous goods (see 3.4~~.~~1.7).

3.4.1 Battery / portable electronic device (PED) fire

Amplified procedures for battery / portable electronic device (PED) fire	
Step	*Cabin crew action*
1.	**IDENTIFY THE ~~ITEM~~SOURCE OF THE FIRE** It may not be possible for cabin crew to identify the item (source of fire ~~or smoke~~) right away, especially if the fire has started in a ~~seat pocket or~~passenger bag. Identify the ~~device is not readily accessible. In this case, cabin crew should apply firefighting procedures, as a first step (Step 2)~~location and ~~then attempt to identify~~any other appropriate details of the ~~item (Step 1). If~~ hazard. Bring appropriate equipment and protective equipment to the ~~item is contained in baggage,~~area to assist with finding the ~~crew's actions would be similar to the actions~~source and to prepare for ~~a device that is visible or readily accessible~~firefighting.
2.	**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS** During any occurrence concerning a fire in the cabin, the cabin crew should notify to the pilot-in-command immediately and keep the flight crew informed of all actions taken and of the effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each is kept fully informed of the other's actions and intentions. Minimizing the spreading of smoke and fumes into the flight deck is critical for the continued safe operation of the aircraft, therefore it is essential to keep the flight deck door closed at all times. Crew communication and coordination are of utmost importance. The use of the interphone is the primary means of communication between crew members, unless the interphone system fails.

Amplified procedures for battery / portable electronic device (PED) fire	
Step	*Cabin crew action*
~~2.~~ 3.	**APPLY FIREFIGHTING ~~PROCEDURE~~PROCEDURES TO EXTINGUISH FLAMES** ~~a) Apply communication procedures.~~ a) use appropriate protective equipment; b) ~~Use~~use appropriate firefighting equipment ~~and protective equipment, as required.~~; c) ~~Fight fire.~~extinguish flames; and d) ~~Manage~~manage passengers and cabin, as required. ~~During any occurrence concerning a fire in the cabin, the cabin crew should notify the pilot-in-command immediately and keep the flight crew informed of all actions taken and of the effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each is kept fully informed of the other's actions and intentions. Minimizing the spreading of smoke and fumes into the flight deck is critical for the continued safe operation of the aircraft, therefore it is essential to keep the flight deck door closed at all times. Crew communication and coordination are of utmost importance. The use of the interphone is the primary means of communication between crew members, unless the interphone system fails.~~ ~~Appropriate firefighting procedures should be used to deal with any fire. Cabin crew should use firefighting equipment to extinguish the fire and prevent its spread to additional flammable materials. It is Important that cabin crew use protective equipment (e.g. protective breathing equipment, protective gloves) when fighting a fire.~~ ~~If fire develops, cabin crew should take prompt action to~~It is important that cabin crew use protective equipment (such as protective breathing equipment and fire-fighting gloves) when fighting a fire. Cabin crew should use halon, halon replacement, or water to extinguish the flames. This should be accomplished as soon as possible to prevent the flames from spreading to additional flammable materials. Halon and halon replacement fire extinguishers are optimal for the extinguishing of flames or when other nearby materials have become involved in the fire, but do not provide any cooling properties to the battery. It is important to move past this step to the cooling step as soon as possible once flames are gone. If deemed more efficient or expedient, water may be used instead of halon for knocking down small flames and imparting a cooling effect in one step. It is critical that once any flames are extinguished that the cabin crew progress to apply Step 4 (Pour water on the device in place). It is important that cabin crew use protective equipment (such as protective breathing equipment and fire-resistant gloves) when fighting a fire. Cabin crew should move passengers away from the area involved and, if necessary, provide wet towels or cloths and give instructions for passengers to breathe through them.

Amplified procedures for battery / portable electronic device (PED) fire	
Step	*Cabin crew action*
	Caution: In certain firefighting situations cabin crew may assess and deem it necessary to slightly open baggage to allow entry of the extinguishing agent and non-flammable liquid. ~~In order to~~To avoid injury from a flash fire, cabin crew should use caution when opening the affected baggage when there is any indication of smoke or flames. This should only be done after donning appropriate protective equipment.
~~3.~~ 4.	**REMOVE POWER** a) Disconnect the device from the power supply, if safe to do so. b) Turn off in-seat power, if applicable. c) Verify that power to the remaining electrical outlets remains off, if applicable. ~~The following is moved from the end of this step:~~ **Caution:** Do not attempt to remove the battery from the device. It is important that cabin crew instruct the passenger to disconnect the device from the power supply, if it is deemed safe to do so. A battery has a higher likelihood of catching fire due to overheating during or immediately following a charging cycle, although the effects may be delayed for some period of time. By removing the external power supply from the device, it will be assured that additional energy is not being fed to the battery to promote a fire. Cabin crew should turn off the in-seat power to the remaining electrical outlets until it can be assured that a malfunctioning aircraft system does not contribute to additional failures of the passengers' portable electronic devices. Cabin crew should visually check that power to the remaining electrical outlets remains off until the aircraft's system can be determined to be free of faults, if the device was previously plugged in. The removal of power may occur simultaneously to other cabin crew actions (~~e.g.~~such as obtaining water to pour on the device). Depending on the aircraft type, in-seat power may have to be turned off by the flight crew ~~members~~ may turn off in-seat power.

Amplified procedures for battery / portable electronic device (PED) fire	
Step	*Cabin crew action*
~~4.~~5.	**~~LEAVE THE DEVICE IN ITS PLACE AND~~ POUR WATER (OR OTHER NON-FLAMMABLE LIQUID) ON THE DEVICE** ~~Cabin crew need to use~~If the device is smoking but does not show signs of flame, water needs to be applied to cool the device and prevent flames. Use water (or other non-flammable liquid) to cool a battery that has ignited to prevent the spread of heat to other cells in the battery. ~~Cabin crew should pour~~Pour liquid onto the device until signs of steam and crackling have subsided completely. *Liquid may turn to steam when applied to the hot battery.* The action of pouring water or non-flammable liquid on the device cools the ~~battery cells and prevents thermal runaway~~device and can prevent thermal runaway from propagating to nearby cells. It may also lower the risk of a cell that is venting, but not yet in full thermal runaway, from reacting more violently.
	A battery involved in a fire can reignite and emit flames multiple times as heat is transferred to other cells in the battery. Therefore, cabin crew should monitor the device regularly to identify if there is any indication that a fire hazard may still exist. If there is any smoke or indication of fire, crew should pour more water (or other non-flammable liquid) on the device. Monitor for any indication of reignition and continue to pour water (or other non-flammable liquid) on the device. **Caution:** a) Do not attempt to pick up or move the device until completing this step; batteries may explode or burst into flames without warning. The device should not be moved if displaying any of the following: flames/flaring, smoke, unusual sounds (such as crackling), debris, or shards of material separating from the device. b) Do not cover or enclose the device as it could cause it to overheat. c) Do not use ice or dry ice to cool the device. Ice or other materials insulate the device, increasing the likelihood that additional battery cells will reach thermal runaway.
~~5.~~	**~~MONITOR FOR ANY INDICATION OF REIGNITION AND CONTINUE TO POUR WATER (OR OTHER NON-FLAMMABLE LIQUID) ON THE DEVICE~~** ~~If smoke or flames reappear, cabin crew should repeat Steps 2 and 4.~~
~~6.~~	**~~WAIT UNTIL THE DEVICE HAS COOLED~~** ~~Cabin crew may move the device with caution following a certain period, once it has cooled down and if there is no evidence of smoke, heat, or if there is a reduction in the crackling or hissing sound usually associated with a lithium battery fire (this may take approximately 15 minutes). The waiting period may vary based on the device and its size.~~

Amplified procedures for battery / portable electronic device (PED) fire	
Step	*Cabin crew action*
~~7.~~ 6.	**OBTAIN A SUITABLE EMPTY CONTAINER** A suitable empty container may include a pot, jug, galley unit or ~~toilet waste bin.~~lavatory waste bin, or fire containment equipment (only when they are designed to contain water). When selecting a suitable empty container, cabin crew should consider the size of the device to be submerged in it. Cabin crew should select a container which can be filled with enough liquid to completely submerge the device. ~~*Note.— If the aircraft is equipped with a fire containment equipment and the device fits inside it, cabin crew should use the equipment following the manufacturer's instructions.*~~
~~8.~~	~~**FILL THE CONTAINER WITH ENOUGH WATER (OR OTHER NON-FLAMMABLE LIQUID) TO SUBMERGE THE DEVICE**~~ ~~Cabin crew should fill the suitable empty container with enough water or non-flammable liquid to completely submerge the device.~~
~~9.~~7.	**PLACE THE DEVICE IN THE CONTAINER AND COMPLETELY SUBMERGE IN WATER (OR OTHER NON-FLAMMABLE LIQUID), USING PROTECTIVE EQUIPMENT** It is important that cabin crew wear protective equipment ~~(e.g.~~such as protective breathing equipment~~, protective~~ and fire-fighting gloves~~),~~ when moving any device involved in a fire. Place the device in the container and pour water or a non-flammable liquid into the container until the device is completely submerged. It is also possible to put the device in the container once the container already contains water. Efforts should be taken to minimize splashing of water in the aircraft when dropping the device in a container that already contains water.
~~8.~~10	**STOW AND SECURE (IF POSSIBLE) THE CONTAINER TO PREVENT SPILLAGE** Once the device is completely submerged, cabin crew should stow the container and, if possible, ~~secured~~secure it to prevent spillage.
9.	**MONITOR THE DEVICE AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT** Cabin crew should monitor the device and the surrounding area for the remainder of the flight to verify that the device does not pose further hazard.

Amplified procedures for battery / portable electronic device (PED) fire	
Step	*Cabin crew action*
10.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION** Upon arrival, cabin crew should apply the operator's post-incident procedures. These ~~may~~should include identifying to ground personnel where the item is stowed and providing ~~all~~relevant information about the item. Crew ~~should~~need to complete the required documentation, as per operator procedures, so that the operator is ~~notified of the event~~able to comply with mandatory reporting requirements and can ensure, proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

3.4.2 Overhead bin battery / portable electronic device (PED) fire / smoke

Amplified procedures for overhead bin battery / portable electronic device (PED) fire / smoke	
Step	*Cabin crew action*
1.	~~**APPLY FIREFIGHTING PROCEDURE**~~**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS** ~~a) Apply communication procedures.~~ ~~b) Use appropriate firefighting equipment and protective equipment, as required.~~ ~~c) Fight fire.~~ ~~d) Manage passengers and cabin, as required.~~ During any occurrence concerning a fire in the cabin, the cabin crew should notify the pilot-in-command immediately and keep the flight crew informed of all actions taken and of the effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each is kept fully informed of the other's actions and intentions. Minimizing the spreading of smoke and fumes into the flight deck is critical for the continued safe operation of the aircraft, therefore it is essential to keep the flight deck door closed ~~at all times~~ until the hazard is no longer present. Crew communication and coordination are of utmost importance. The use of the interphone is the primary means of communication between crew members, unless the interphone system fails.

Amplified procedures for overhead bin battery / portable electronic device (PED) fire / smoke	
Step	*Cabin crew action*
~~1.~~2.	**APPLY FIREFIGHTING PROCEDURE TO EXTINGUISH FLAMES** a) use appropriate protective equipment; b) use appropriate firefighting equipment; c) extinguish flames; and d) manage passengers and cabin, as required. ~~Appropriate firefighting procedures should be used to deal with any fire. Cabin crew should use firefighting equipment to extinguish the fire and prevent its spread to additional flammable materials.~~ It is important that cabin crew use protective equipment (~~e.g.~~ such as protective breathing equipment~~, protective~~ and fire-fighting gloves) when fighting a fire. Use halon, halon replacement, or water to extinguish the flames. This should be accomplished as soon as possible to prevent the flames from spreading to additional flammable materials. Halon and halon replacement fire extinguishers are optimal for the extinguishing of flames or when other nearby materials have become involved in the fire, but do not provide any cooling properties to the battery. It is important to move past this step to the cooling step as soon as possible once flames are gone. If deemed more efficient or expedient, water may be used instead of halon for knocking down small flames and imparting a cooling effect in one step. It is critical that once any flames are extinguished that the cabin crew progress to apply Step 4 (Pour water on the device in place). Due to the weight and size of some overhead bins, and their opening movement, the cabin crew member who is fighting the fire may require assistance in opening and controlling the overhead bin. When fighting an overhead bin fire, the cabin crew member should position themselves at the opposite end of the overhead bin, where the smoke / flames are visible. This action prevents further spreading embers due to the force of the extinguishing agent as it is discharged and comes into contact with the overhead bin. ~~If fire develops, c~~Cabin crew should take prompt action to move passengers away from the area involved and, if necessary, provide wet towels or cloths and give instructions for passengers to breathe through them. *Note.— If the origin of the fire / smoke cannot be confirmed visually, cabin crew should use the back of the hand to search for hot overhead bin surfaces.* **Caution:** 1) ~~Do not u~~Use the back of the hand and not the palm of the hand~~ but the back of the hand~~ to search for hot overhead bin surfaces, ~~since it~~ because the back of the hand is more sensitive to temperature differences.

Amplified procedures for overhead bin battery / portable electronic device (PED) fire / smoke	
Step	*Cabin crew action*
	~~**Caution:**~~ 2) In certain firefighting situations, cabin crew may assess and deem it necessary to slightly open baggage to allow entry of the extinguishing agent and non-flammable liquid. ~~In order t~~To avoid injury from a flash fire, cabin crew should use caution when opening the affected baggage when there is any indication of smoke or flames. This should only be done after donning appropriate protective equipment.
~~2~~3.	**IDENTIFY THE ~~ITEM~~ SOURCE OF THE FIRE** If the device is visible and accessible, or, if the device is contained in baggage and flames are visible: a) Re-apply Step ~~1~~2 to extinguish the flames, if applicable~~.~~; and b) Apply Steps ~~3~~4 to 10. If smoke is coming from the overhead bin, but the device is not visible or accessible: a) Remove other baggage from the overhead bin to access the affected baggage/item~~.~~; b) Identify the item; and~~.~~ c) Apply Steps ~~3~~4 to 10. It may not be possible for cabin crew to identify the item (source of fire or smoke) right away, especially if the fire has started in an overhead bin or the device is not readily accessible. ~~If the device is visible and accessible or if the device is contained in baggage and flames are visible, cabin crew should apply firefighting procedures, as a first step.~~ ~~If smoke is coming from the overhead bin, but the device is not visible or accessible, or there is no indication of fire, cabin crew should apply firefighting procedures, as a first step. Afterwards, cabin crew should remove all baggage from the overhead bin with caution until the item can be identified. Once the item is identified, apply Steps 3 to 10.~~

Amplified procedures for overhead bin battery / portable electronic device (PED) fire / smoke	
Step	*Cabin crew action*
~~3~~4.	**~~LEAVE THE DEVICE IN ITS PLACE AND~~ POUR WATER (OR OTHER NON-FLAMMABLE LIQUID) ON THE DEVICE (BAGGAGE)** ~~Cabin crew need to use~~If the device is smoking but does not show signs of flame, water needs to be applied to cool the device and prevent flames. Use water (or other non-flammable liquid) to cool a battery that has ignited to prevent the spread of heat to other cells in the battery. ~~Cabin crew should pour~~Pour liquid onto the baggage or device until signs of steam and crackling have subsided completely. Liquid may turn to steam when applied to the hot battery. The action of pouring water or non-flammable liquid on the device cools the ~~battery cells and prevents thermal runaway.~~device and can prevent thermal runaway from propagating to nearby cells. It may also lower the risk of a cell that is venting, but not yet in full thermal runaway, from reacting more violently. A battery involved in a fire can reignite and emit flames multiple times as heat is transferred to other cells in the battery. Therefore, cabin crew should monitor the device regularly to identify if there is any indication that a fire hazard may still exist. If there is any smoke or indication of fire, crew should pour more water (or other non-flammable liquid) on the device. Monitor for any indication of reignition and continue to pour water (or other non-flammable liquid) on the device. Caution: a) Do not attempt to pick up or move the device until completing this step; batteries may explode or burst into flames without warning. The device should not be moved if displaying any of the following: flames/flaring, smoke, unusual sounds (such as crackling), debris, or shards of material separating from the device. b) Do not cover or enclose the device as it could cause it to overheat. c) Do not use ice or dry ice to cool the device. Ice or other materials insulate the device, increasing the likelihood that additional battery cells will reach thermal runaway.
~~4.~~	**~~MONITOR FOR ANY INDICATION OF REIGNITION AND CONTINUE TO POUR WATER (OR OTHER NON-FLAMMABLE LIQUID) ON THE DEVICE~~** ~~If smoke or flames reappear, cabin crew should repeat Steps 1 and 3.~~
~~5.~~	**~~WAIT UNTIL THE DEVICE HAS COOLED~~** ~~Cabin crew may move the device with caution following a certain period, once it has cooled down and if there is no evidence of smoke, heat, or if there is a reduction in the crackling or hissing sound usually associated with a lithium battery fire (this may take approximately 15 minutes). The waiting period may vary based on the device and its size.~~

Amplified procedures for overhead bin battery / portable electronic device (PED) fire / smoke	
Step	*Cabin crew action*
~~6.~~5.	**OBTAIN A SUITABLE EMPTY CONTAINER** A suitable empty container may include a pot, jug, galley unit or ~~toilet waste bin.~~lavatory waste bin or fire containment equipment (only when they are designed to contain water). When selecting a suitable empty container, cabin crew should consider the size of the device to be submerged in it. Cabin crew should select a container which can be filled with enough liquid to completely submerge the device. ~~*Note.— If the aircraft is equipped with a fire containment equipment and the device fits inside it, cabin crew should use the equipment following the manufacturer's instructions.*~~
~~7.~~	~~**FILL THE CONTAINER WITH ENOUGH WATER (OR OTHER NON-FLAMMABLE LIQUID) TO SUBMERGE THE DEVICE**~~ ~~Cabin crew should fill the suitable empty container with enough water or non-flammable liquid to completely submerge the device.~~
~~8.~~6.	**PLACE THE DEVICE IN THE CONTAINER AND COMPLETELY SUBMERGE IN WATER (OR OTHER NON-FLAMMABLE LIQUID), USING PROTECTIVE EQUIPMENT** Place device in the container and pour water or a non-flammable liquid in the container until the device is completely submerged. It is also possible to put the device in the container once the device already contains water. Efforts should be taken to minimize splashing of water in the aircraft when dropping the device in a container that already contains water. It is important that cabin crew wear protective equipment (~~e.g.~~such as protective breathing equipment~~, protective~~ and firefighting gloves~~),~~) when moving any device involved in a fire.
~~9.~~7.	**STOW AND SECURE (IF POSSIBLE) THE CONTAINER TO PREVENT SPILLAGE** Once the device is completely submerged, cabin crew should stow the container and, if possible, ~~secured~~secure it to prevent spillage.
~~10.~~8.	**MONITOR THE DEVICE AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT** Cabin crew should ~~M~~monitor the device and the surrounding area for the remainder of the flight to verify that the device does not pose further hazard.

Amplified procedures for overhead bin battery / portable electronic device (PED) fire / smoke	
Step	*Cabin crew action*
~~11.~~9.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION** Upon arrival, cabin crew should apply the operator's post-incident procedures. These ~~may~~should include identifying to ground personnel where the item is stowed and providing ~~all~~relevant information about the item. Crew ~~should~~need to complete the required documentation, as per operator procedures, so that the operator is ~~notified of the event,~~able to comply with mandatory reporting requirements and can ensure proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

3.4.3 Overheated battery / electrical smell involving a portable electronic device (PED) — no visible fire or smoke

Amplified procedures for overheated battery / electrical smell involving a portable electronic device (PED) — no visible fire or smoke	
Step	*Cabin crew action*
	If there are signs of fire (smoke, fumes, flames), **APPLY PROCEDURES FOR BATTERY/PED FIRE (SEE 3.4.1)**
1.	**IDENTIFY THE ITEM** Cabin crew should ~~i~~identify the source of overheat or electrical smell~~.~~ or ~~A~~ask the passenger concerned to identify the item.
2.	**INSTRUCT THE PASSENGER TO TURN OFF THE DEVICE IMMEDIATELY** It is important that cabin crew instruct the passenger to turn off the device immediately, and, if possible and safe to do so, to remove the power supply and prevent further overheating or a fire.

Amplified procedures for overheated battery / electrical smell involving a portable electronic device (PED) — no visible fire or smoke	
Step	*Cabin crew action*
3.	**REMOVE POWER** a) Disconnect the device from the power supply, if safe to do so. b) Turn off in-seat power, if applicable. c) Verify that power to the remaining electrical outlets remains off, if applicable. d) Verify that the device remains off for the remainder of the flight. **Caution:** Do not attempt to remove the battery from the device. It is important that cabin crew instruct the passenger to disconnect the device from the power supply, if it is deemed safe to do so. A battery has a higher likelihood of catching fire due to overheating during or immediately following a charging cycle, although the effects may be delayed for some period of time. By removing the external power supply from the device, it will be assured that additional energy is not being fed to the battery to promote a fire. Cabin crew should turn off the in-seat power to the remaining electrical outlets until it can be assured that a malfunctioning aircraft system does not contribute to additional failures of the passengers' portable electronic devices. Cabin crew should visually check that power to the remaining electrical outlets remains off until the aircraft's system can be determined to be free of faults, if the device was previously plugged in. Depending on the aircraft type, in-seat power may have to be turned off by the fight crew. It is important that cabin crew verify that the device remains turned off for the duration of the flight.
4.	**INSTRUCT THE PASSENGER TO KEEP THE DEVICE VISIBLE AND MONITOR CLOSELY** The device should remain visible (not stowed such as in baggage or seat pocket or on a person (pocket)) and should be monitored closely. Unstable batteries may ignite even after the device is turned off. Cabin crew should verify that the device is stowed only for landing.
~~5.~~	~~**APPLY PROCEDURES FOR BATTERY / PED FIRE / SMOKE IF SMOKE OR FLAMES APPEAR**~~ ~~If smoke or flames appear, apply the BATTERY / PORTABLE ELECTRONIC DEVICE (PED) FIRE / SMOKE procedures (see 3.4.1).~~

Amplified procedures for overheated battery / electrical smell involving a portable electronic device (PED) — no visible fire or smoke	
Step	*Cabin crew action*
~~6.~~5.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION** Upon arrival, cabin crew should apply the operator's post-incident procedures. These ~~may~~should include identifying to ground personnel where the item is stowed and providing ~~all~~relevant information about the item. Crew ~~should~~need to complete the required documentation, as per operator procedures, so that the operator is ~~notified of the event,~~able to comply with mandatory reporting requirements, and can ensure proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

3.4.4 PED fallen into / trapped in a passenger seat

Amplified procedures for PED fallen into / trapped in a passenger seat	
Step	*Cabin crew action*
	If there are signs of flames or smoke, **APPLY PROCEDURES FOR BATTERY/PED FIRE (SEE 3.4.1)**
1.	**OBTAIN INFORMATION FROM THE PASSENGER ~~BY ASKING THE PASSENGER~~** a) Ask the passenger to identify the item. b) Ask where the passenger suspects that the item may have dropped or slipped into. c) Ask if the seat was moved since misplacing the item. Cabin crew should ask the passenger concerned to identify the item, and where the passenger suspects it may have dropped or slipped into, and if the passenger has moved the seat since misplacing the item.
2.	**RETRIEVE AND USE PROTECTIVE EQUIPMENT** Due to the design of some passenger seats, a PED can slip under a seat covering and/or cushion, behind an armrest or down the side of a seat. Inadvertent crushing of the device poses a fire hazard. Cabin crew should don ~~protective~~ fire-fighting gloves before trying to retrieve the item.

Amplified procedures for PED fallen into / trapped in a passenger seat	
Step	*Cabin crew action*
3.	**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS** ~~Due to the design of some passenger seats, a PED can slip under a seat covering and/or cushion, behind an armrest or down the side of a seat. Inadvertent crushing of the device poses a fire hazard.~~ Any occurrence concerning a fire hazard in the cabin should be notified immediately to the pilot-in-command who should be kept informed of all actions taken and of the effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each is kept fully informed of the other's actions and intentions.
4.	**RETRIEVE THE ITEM IF SAFE TO DO SO** **Caution:** Do not move the seat electrically or mechanically when attempting to retrieve the item. To prevent crushing of the PED and reduce the potential fire hazard to the device and the surrounding area, cabin crew and/or the passenger should not use the electrical or mechanical seat functions in an attempt to retrieve the item. Cabin crew should move the passenger and, if applicable, the passenger(s) seated next to the affected seat from the area, to facilitate the search. Cabin crew should not move the seat. If the cabin crew is unable to retrieve the item without moving the seat, it may need to be retrieved by personnel on the ground, after landing at the next destination. If the item cannot be retrieved, cabin crew should move the passenger to another seat, if available. Cabin crew should turn off the individual in-seat power, if possible, to do so. Depending on the aircraft type, in-seat power may have to be turned off by the fight crew.
~~5.~~	~~**APPLY PROCEDURES FOR BATTERY / PED FIRE / SMOKE IF SMOKE OR FLAMES APPEAR**~~ ~~If smoke or flames appear, apply the BATTERY / PORTABLE ELECTRONIC DEVICE (PED) FIRE / SMOKE procedures (see 3.4.1).~~
~~6~~5.	**MONITOR THE SEAT AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT** Cabin crew should monitor the seat and the surrounding area for the remainder of the flight to verify that the device does not pose further hazard.

Amplified procedures for PED fallen into / trapped in a passenger seat	
Step	*Cabin crew action*
~~7~~6.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION** Upon arrival, cabin crew should apply the operator's post-incident procedures. These ~~may~~ should include identifying to ground personnel where the item is ~~located~~ stowed and providing ~~all~~ relevant information about the item. Crew ~~should~~ need to complete the required documentation, as per operator procedures, so that the operator is ~~notified of the event,~~ able to comply with mandatory reporting requirements, and can ensure proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

3.4.5 Battery / portable electronic device (PED) fire ~~/ smoke~~ on the flight deck

Amplified procedures for battery / portable electronic device (PED) fire ~~/ smoke~~ on the flight deck	
Step	*Cabin crew action*
1.	**RECOGNIZE SIGNAL FOR FIRE ~~/ SMOKE~~ ON THE FLIGHT DECK** a) Receive call out from the flight deck (~~e.g.~~ such as "back up assistance P-E-D!"). b) Retrieve and use protective equipment, as applicable to the situation. c) Obtain the appropriate fire extinguisher. d) Enter the flight deck. *Note.— ~~The first cabin crew member ready to act should enter the flight deck.~~ Given the urgency of incidents in the flight deck~~.~~, close coordination with the flight crew is essential, and following flight crew directives can be vital.* The flight crew's main responsibility during any occurrence is to maintain control of the aircraft. Therefore, ~~they~~ removing an item emitting flames or smoke from the flight deck, as soon as possible, is the priority. To do so, flight crew may call upon the cabin crew to assist in the event of ~~fire~~ flame / smoke on the flight deck. As notifying the cabin crew of the ~~fire~~ flame / smoke occurrence on the flight deck by interphone may delay the response, the use of the public address (PA) system is considered the preferred method of notification. The flight crew should use phraseology that clearly explains the type of emergency situation to the cabin crew without creating panic amongst the passengers. ~~The flight crew should use specific sentence, such as "back up assistance P-E-D!", over the PA system to alert the cabin crew.~~ The first cabin crew member who is ready to act should enter the flight deck. ~~It is important that cabin crew use protective equipment (e.g. protective breathing equipment, protective gloves) when fighting a fire. Cabin crew should use firefighting equipment to extinguish the fire and prevent its spread to additional flammable~~

Amplified procedures for battery / portable electronic device (PED) fire ~~/ smoke~~ on the flight deck	
Step	*Cabin crew action*
	~~materials.~~
2.	**APPLY FIREFIGHTING PROCEDURE TO EXTINGUISH FLAMES** a) If the item is on fire, in coordination with the flight crew, extinguish the fire. b) Once the fire has been extinguished or the device is not on fire (it may emit visible smoke, or ~~be overheated~~ show signs of bulging/overheating), remove it from the flight deck, if possible. c) If the device cannot be moved, pour water (or other non-flammable liquid) on it. The joint action between the flight crew and the cabin crew depends on the location and type of the affected device. The flight crew ~~would normally~~ may have started the appropriate emergency procedures to deal with the fire before the arrival of the cabin crew, including removing the device from any power source. In that case, cabin crew should join the firefighting actions according to the situation. When the decision is taken to fight the fire on the flight deck, in coordination with the flight crew, the cabin crew should use firefighting equipment to extinguish the fire and prevent its spread to additional flammable materials. Halon and halon replacement fire extinguishers are optimal for the extinguishing of flames, but do not provide any cooling properties to the battery. It is critical that once any flames are extinguished that the cabin crew progress to apply Step 4 (Pour water on the device in place). It is important that cabin crew wear protective equipment (~~e.g.~~ such as protective breathing equipment~~, protective~~ and fire-fighting gloves) when fighting a fire in a confined space, such as the flight deck. **Caution:** In certain firefighting situations (~~e.g.~~ such as to prevent flight crew incapacitation or a loss of control in-flight), crew may assess and deem it necessary to remove the device immediately from the flight deck even if it is still emitting smoke or flames are present. ~~In order to avoid injury, cabin crew should use caution and only attempt this action after donning protective equipment.~~ In such case, cabin crew should apply the firefighting procedure in 3.4.1, after the device is removed from the flight deck.
3	**REMOVE THE DEVICE FROM THE FLIGHT DECK** Once the fire has been extinguished or the device is no longer on fire (even if it is still emitting visible smoke or feels overheated), cabin crew should remove it from the flight deck, if possible. Minimizing the spreading of smoke and fumes in the flight deck is critical for the continued safe operation of the aircraft. If it cannot be moved, cabin crew should use water (or other non-flammable liquid) to cool a battery that has ignited to prevent the spread of heat to other cells in the battery. After the device is removed from the flight deck, the cabin crew should apply the firefighting procedure, as described in 3.4.1, if it is still on fire. Water (or other non-flammable liquid) should be used to cool a battery that has ignited to prevent the spread of heat to other cells in the battery.

Amplified procedures for battery / portable electronic device (PED) fire ~~/ smoke~~ on the flight deck	
Step	*Cabin crew action*
4	**CLOSE THE FLIGHT DECK DOOR** ~~The~~Upon removal of the device, the flight deck door should be maintained closed ~~once~~until the ~~device~~hazard is ~~removed from the flight deck~~no longer present. Crew communication and coordination are of utmost importance. The use of the interphone is the primary means of communication unless that system fails.
5	**APPLY PROCEDURES FOR BATTERY / PED FIRE ~~/ SMOKE IF SMOKE OR FLAMES APPEAR~~** After the device is removed from the flight deck, apply the BATTERY / PORTABLE ELECTRONIC DEVICE (PED) FIRE ~~/ SMOKE~~ procedures (see 3.4.1).
6.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION** Upon arrival, cabin crew should apply the operator's post-incident procedures. These ~~may~~should include identifying to ground personnel where the item is stowed and providing ~~all~~relevant information about the item. Crew ~~should~~need to complete the required documentation, as per operator procedures, so that the operator is ~~notified of the event,~~able to comply with mandatory reporting requirements, and can ensure proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

3.4.6 Fire involving dangerous goods

Amplified procedures for fire involving dangerous goods	
Step	*Cabin crew action*
1.	**IDENTIFY THE ITEM** Cabin crew should ask the passenger concerned to identify the item. The passenger may be able to give some guidance on the hazard(s) involved and how these could be dealt with. If the passenger can identify the item, refer to Section 4 of this document for the appropriate emergency response drill. It may not be possible for cabin crew to identify the item right away, especially if the source of the fire is unknown or the item is not readily accessible. In this case, cabin crew should apply firefighting procedures as a first step (Step 2) and then attempt to identify the item (Step 1). If the item is contained in baggage, the crew's actions would be similar to the actions for an item that is visible or readily accessible.

Amplified procedures for fire involving dangerous goods	
Step	*Cabin crew action*
2.	**APPLY FIREFIGHTING PROCEDURE** a) Apply communication procedures. b) Use appropriate firefighting equipment and protective equipment, as required. c) Fight fire. d) Manage passengers and cabin, as required. During any occurrence concerning a fire in the cabin, the cabin crew should notify the pilot-in-command immediately and keep the flight crew informed of all actions taken and of the effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each is kept fully informed of the other's actions and intentions. Minimizing the spreading of smoke and fumes into the flight deck is critical for the continued safe operation of the aircraft, therefore it is essential to keep the flight deck door closed ~~at all times~~ until the hazard is no longer present. Crew communication and coordination are of utmost importance. The use of the interphone is the primary means of communication between crew members, unless the interphone system fails. Appropriate firefighting procedures should be used to deal with any fire. Cabin crew should use firefighting equipment to extinguish the fire and prevent its spread to additional flammable materials. ~~In general, c~~Cabin crew should not use water on a spillage or when fumes are present since it may spread the spillage or increase the rate of fuming. Consideration should also be given to the possible presence of electrical components when using water extinguishers. It is important that cabin crew use protective equipment (e.g. protective breathing equipment, ~~protective~~ fire-fighting gloves/oven gloves) when fighting a fire. If fire develops, cabin crew should take prompt action to move passengers away from the area involved and, if necessary, provide wet towels or cloths and give instructions for passengers to breathe through them. **Caution:** In certain firefighting situations, cabin crew may assess and deem it necessary to slightly open baggage to allow entry of the extinguishing agent and non-flammable liquid. In order to avoid injury from a flash fire, cabin crew should use caution when opening the affected baggage when there is any indication of smoke or flames. This should only be done after donning appropriate protective equipment.
3.	**MONITOR FOR ANY INDICATION OF REIGNITION** If smoke or flames reappear, cabin crew should repeat Step 2.
4.	**APPLY PROCEDURES FOR SPILLAGE OR LEAKAGE OF DANGEROUS GOODS, IF REQUIRED, ONCE THE FIRE HAS BEEN EXTINGUISHED** In the event of a fire involving dangerous goods, cabin crew may need to apply the SPILLAGE OR LEAKAGE INVOLVING DANGEROUS GOODS procedures (see 3.4.7) once the fire has been extinguished.

Amplified procedures for fire involving dangerous goods	
Step	*Cabin crew action*
5.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION** Upon arrival, cabin crew should apply the operator's post-incident procedures. These may include identifying to ground personnel where the item is stowed and providing all information about the item. Crew should complete the required documentation, as per operator procedures, so that the operator is notified of the event, proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

3.4.7 Spillage or leakage of dangerous goods

Amplified procedures for spillage or leakage of dangerous goods	
Step	*Cabin crew action*
1.	**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS** During any occurrence concerning dangerous goods, the cabin crew should notify the pilot-in-command immediately and keep the flight crew informed of all actions taken and of the effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each is kept fully informed of the other's actions and intentions. Minimizing the spreading of smoke and fumes into the flight deck is critical for the continued safe operation of the aircraft, therefore it is essential to keep the flight deck door closed at all times~~.~~ until the hazard is no longer present. Crew communication and coordination are of utmost importance. The use of the interphone is the primary means of communication between crew members, unless the interphone system fails.
2.	**IDENTIFY THE ITEM** Cabin crew should ask the passenger concerned to identify the item. The passenger may be able to give some guidance on the hazard(s) involved and how these could be dealt with. If the passenger can identify the item, refer to Section 4 of this document for the appropriate emergency response drill.
3.	**COLLECT EMERGENCY RESPONSE KIT OR OTHER USEFUL ITEMS** Cabin crew should collect emergency response kit, if provided, or collect for use in dealing with the spillage or leakage:

Amplified procedures for spillage or leakage of dangerous goods	
Step	*Cabin crew action*
	a) A supply of paper towels or newspapers or other absorbent paper or absorbent fabric (e.g. seat cushion covers, head rest protectors). b) ~~Protective~~Rubber gloves or fire-resistant gloves/oven gloves covered by polyethylene bags. c) At least two large polyethylene waste bin bags. d) At least three smaller polyethylene bags, such as those used for duty-free or bar sales or, if none available, airsickness bags.
4.	**RETRIEVE AND USE PROTECTIVE EQUIPMENT** It is important that cabin crew use protective equipment (~~e.g.~~ such as protective breathing equipment, ~~protective~~rubber gloves or fire-resistant gloves/oven gloves covered by polyethylene bags) when handling a spillage or leakage of dangerous goods. Cabin crew should always protect their hands before touching suspicious packages or items. ~~Fire-resistant gloves or oven gloves covered by polyethylene bags are likely to give suitable protection.~~
5.	**MOVE PASSENGERS AWAY FROM AREA AND DISTRIBUTE WET TOWELS OR CLOTHS** The use of therapeutic oxygen bottles or the passenger drop-out oxygen system to assist passengers in a smoke- or fume-filled passenger cabin should not be considered since considerable quantities of fumes or smoke would be inhaled through the valves or holes in the masks. A more effective aid to passengers in a smoke- or fume-filled environment would be the use of a wet towel or cloth held over the mouth and nose. A wet towel or cloth aids in filtering and is more effective at doing this than a dry towel or cloth. Cabin crew should take prompt action if smoke or fumes develop and move passengers away from the area involved and, if possible, provide wet towels or cloths and give instructions to breathe through them.
6.	**PLACE DANGEROUS GOODS ITEM IN POLYETHYLENE BAGS** In the case of a spill of known or suspected dangerous goods in powder form, cabin crew should: a) Leave everything undisturbed. b) ~~Not~~Do not use fire agent or water. c) Cover area with polyethylene or other plastic bags and blankets. d) Keep area isolated until after landing.

Amplified procedures for spillage or leakage of dangerous goods	
Step	*Cabin crew action*
	With emergency response kit If it is certain that the item will not create a problem, the decision may be made not to move it. In most circumstances, however, it will be better to move the item, and this should be done as suggested below. Cabin crew should place the item in a polyethylene bag as follows: a) Prepare two bags by rolling up the sides and placing them on the floor. b) Place the item inside the first bag with the closure of the item, or the point from which it is leaking from its container, at the top. c) Take off the rubber gloves while avoiding skin contact with any contamination on them. d) Place the rubber gloves in the second bag. e) Close the first bag while squeezing out the excess air. f) Twist the open end of the first bag and use a bag tie to tie it sufficiently tight to be secure but not so tight that pressure equalization cannot take place. g) Place the first bag (containing the item) in the second bag, which already contains the rubber gloves and secure the open end in the same manner as that used for the first bag. **With no emergency response kit** Cabin crew should pick up the item and place it in a polyethylene bag. They should ensure the receptacle containing the dangerous goods is kept upright or the area of leakage is at the top. Using paper towels, newspaper, etc., cabin crew should mop up the spillage, after having ascertained there will be no reaction between what is to be used to mop up and the dangerous goods. They should place the soiled towels, etc., in another polyethylene bag. Cabin crew should place the rubber gloves and bags used to protect the hands either in a separate small polyethylene bag or with the soiled towels. If extra bags are not available, cabin crew should place the towels, rubber gloves, etc., in the same bag as the item. They should expel excess air from the bags and close tightly so as to be secure but not so tight that pressure equalization cannot take place.

Amplified procedures for spillage or leakage of dangerous goods	
Step	*Cabin crew action*
7.	**STOW POLYETHYLENE BAGS** If there is a catering or bar box on board, cabin crew should empty any contents and place the box on the floor, with the door upward. They should place the bag(s) containing the item and any soiled towels, etc., in the box and close the door. Cabin crew should take the box or, if there is no box, the bag(s) to a position as far away as possible from the flight deck and passengers. If a galley or ~~toilet~~lavatory is fitted, cabin crew should consider taking the box or bag(s) there, unless it is close to the flight deck. Cabin crew should use a rear galley or ~~toilet~~lavatory wherever possible but should not place the box or bag(s) against the pressure bulkhead or fuselage wall. If a galley is used, the box or bag(s) can be stowed in an empty waste bin container. If a ~~toilet~~ lavatory is used, the box can be placed on the floor or the bag(s) stowed in an empty waste container. The ~~toilet~~lavatory door should be locked from the outside. In a pressurized aircraft, if a toilet is used, any fumes will be vented away from passengers. However, if the aircraft is unpressurized there may not be positive pressure in a toilet to prevent fumes from entering the passenger cabin. Cabin crew should ensure when moving a box that the opening is kept upward or when moving a bag that either the receptacle containing the dangerous goods is kept upright or the area of leakage is kept at the top. Wherever the box or bag(s) have been located, cabin crew should wedge them firmly in place to prevent them from moving and to keep the item upright. They should ensure that the position of the box or bags will not impede disembarkation from the aircraft.
8.	**TREAT AFFECTED SEAT CUSHIONS / COVERS IN THE SAME MANNER AS DANGEROUS GOODS ITEM** Cabin crew should remove seat cushions, seat backs or other furnishings which have been contaminated by a spillage from their fixtures and place them in a large bin bag or other polyethylene bag, together with any bags used initially to cover them. Cabin crew should stow them away in the same manner as the dangerous goods item causing the incident.
9.	**COVER SPILLAGE ON CARPET / FLOOR** Cabin crew should cover any spillage on the carpet or furnishings with a waste bag or other polyethylene bags, if available. If not, cabin crew should use airsickness bags opened out so that the plastic side covers the spillage or use the plastic covered emergency information cards. If possible, cabin crew should roll up carpet which has been contaminated by a spillage and which is still causing fumes despite being covered and place it in a large bin bag or other polyethylene bag. Cabin crew should place it in a waste bin and stow it, when possible, either in the rear ~~toilet~~lavatory or rear galley. If the carpet cannot be removed it should remain covered by a large bin bag or polyethylene bags, etc., and additional bags should be used to reduce the fumes.

Amplified procedures for spillage or leakage of dangerous goods	
Step	*Cabin crew action*
10.	**MONITOR ITEMS STOWED AWAY / CONTAMINATED FURNISHINGS** Cabin crew should monitor any dangerous goods, contaminated furnishings or equipment which have been removed and stowed away or covered.
11.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION** Upon arrival, cabin crew should apply the operator's post-incident procedures. These may include identifying to ground personnel where the item is stowed and providing all information about the item. Crew should complete the required documentation, as per operator procedures, so that the operator is notified of the event, proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

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APPENDIX C

CLEAN VERSION OF PROPOSED AMENDMENTS TO DOC 9481

FOREWORD

Annex 18 to the Convention on International Civil Aviation – *The Safe Transport of Dangerous Goods by Air* – requires that "The operator shall provide such information in the Operations Manual as will enable the flight crew to carry out its responsibilities with regard to the transport of dangerous goods and shall provide instructions as to the action to be taken in the event of emergencies arising involving dangerous goods." This requirement is also included in the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284). Annex 6, Part I, Appendix 2 also requires that "information and instructions on the carriage of dangerous goods, including action to be taken in the event of an emergency" be included in the operations manual.

This document has been developed with the assistance of the Dangerous Goods Panel to provide guidance to States and operators for developing procedures and policies for crew to deal with dangerous goods incidents on board aircraft. The guidance in this document focuses on incidents during flight. It can, however, be adapted to establish procedures to address the unique aspects that may be associated with incidents that occur while the aircraft is on the ground using a risk-based approach.

This document contains general information on the factors that may need to be considered when dealing with any dangerous goods incident. Guidance, in the form of procedures, is given for both flight crew and cabin crew, and is intended to be used in association with existing emergency procedures established in the aircraft flight manual. In addition, a list of dangerous goods is presented, both alphabetically and by UN (United Nations) number. The list identifies an appropriate emergency response drill for each item and a chart gives details of the drill and identifies other relevant safety matters. The list of dangerous goods presented in this document is based on the Dangerous Goods List (Table 3-1) contained in the 2025–2026 edition of Doc 9284 and reflects, therefore, all additions, deletions and changes to Table 3-1 introduced in that edition of the Technical Instructions. Operators should use this document to develop procedures that take into account the type of aircraft, type of operation, and available emergency response equipment. A risk-based approach should be used to support the development of these procedures. The mandatory dangerous programmes for flight crews and other relevant personnel should include the operator's emergency response procedures.

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CONTENTS

Section 1

GENERAL INFORMATION

1.1 CARGO COMPARTMENT CLASSIFICATION

Cargo compartments are classified in many national airworthiness requirements as follows:

Class A. A Class A cargo or baggage compartment is one in which:

a) the presence of a fire would be easily discovered by a crew member while at the crew member's station; and

b) each part of the compartment is easily accessible in flight.

Class B. A Class B cargo or baggage compartment is one in which:

a) there is sufficient access in flight to enable a crew member, standing at any one access point and without stepping into the compartment, to extinguish a fire occurring in any part of the compartment using a hand fire extinguisher;

b) when the access provisions are being used, no hazardous quantities of smoke, flames or extinguishing agent will enter any compartment occupied by the crew or passengers; and

c) there is a separate approved smoke detector or fire detector system to give warning at a flight crew member station.

Class C. A Class C cargo or baggage compartment is one not meeting the requirements for either a Class A or B compartment but in which:

a) there is a separate approved smoke detector or fire detector system to give warning at a flight crew member station;

b) there is an approved built-in fire-extinguishing or suppression system controllable from the cockpit;

c) there are means to exclude hazardous quantities of smoke, flames, or extinguishing agent from any compartment occupied by the crew or passengers; and

d) there are means to control ventilation and drafts within the compartment so that the extinguishing agent used can control any fire that may start within the compartment.

Class D. A Class D cargo or baggage compartment is one in which:

a) a fire occurring in it will be completely confined without endangering the safety of the aeroplane or the occupants;

b) there are means to exclude hazardous quantities of smoke, flames, or other noxious gases from any compartment occupied by the crew or passengers;

c) ventilation and drafts are controlled within each compartment so that any fire likely to occur in the compartment will not progress beyond safe limits; and

d) the compartment volume does not exceed 28.3 m^3 (1 000 ft^3).

Note.— Certain Class D compartments are provided with ventilation, in which case a fire detector is also required. In addition, Class D compartments were historically permitted to be larger, if the volume and the ventilation rate per hour sum to less than 2 000 ft^3.

Class E. A Class E cargo compartment is one on aeroplanes used only for the carriage of cargo and in which:

a) there is a separate approved smoke or fire detector system to give warning at the pilot or flight engineer station;

b) there are means to shut off the ventilating airflow to or within the compartment, and the controls for these means are accessible to the flight crew in the crew compartment;

c) there are means to exclude hazardous quantities of smoke, flames, or noxious gases, from the flight crew compartment; and

d) the required crew emergency exits are accessible under any cargo loading condition.

Class F. A Class F compartment must be located on the main deck and is one in which:

a) there is a separate approved smoke detector or fire detector system to give warning at the pilot or flight engineer station;

b) there are means to extinguish or control a fire without requiring a crew member to enter the compartment; and

c) there are means to exclude hazardous quantities of smoke, flames, or extinguishing agent from any compartment occupied by the crew or passengers.

1.2 CARGO COMPARTMENT LOCATIONS

Typically, Class A cargo compartments are small cargo compartments that may be located between the flight deck and the passenger cabin or adjacent to the galley area or at the back of the aircraft.

A Class B cargo compartment is usually much larger than a Class A cargo compartment and can be located in an area remote from the flight deck. Class B cargo compartments are found on “combi” aircraft between the flight deck and the passenger cabin or behind the passenger cabin at the rear of the aircraft.

Note.— A “combi” aircraft is one in which both cargo and passengers are carried on the main deck.

The volume of a Class C cargo compartment is usually larger than Class A or B and such cargo compartments are generally found under the floor of the aircraft. A Class C cargo compartment may have more than one suppressant reservoir, enabling a second charge of extinguishant to be fired into the cargo compartment some time after the fire has initially been controlled by the first charge.

Instead of being equipped with fire detection and extinguishing systems, Class D cargo compartments are designed to control a fire by severely restricting the supply of oxygen. Class D cargo compartments are to

be found under the passenger cabin floor on most jet transport aircraft. However, it must be appreciated that certain dangerous goods are themselves oxygen producers. Therefore, it cannot be assumed that a fire in a Class D cargo compartment will necessarily self-extinguish.

A Class F cargo compartment is the main deck cargo compartment on a combi aeroplane, i.e. one where the main deck has both a passenger cabin and a cargo compartment.

A conventional passenger aeroplane is usually fitted with either Class C or Class D cargo compartments under the passenger cabin. A cargo aeroplane is usually fitted with a Class E main deck cargo compartment and with Class D, Class C, or Class E lower deck cargo compartments. A “combi” aeroplane is usually fitted with a Class B main deck cargo compartment, either in front or behind the passenger cabin and with a Class C and/or Class D cargo compartment under the floor. A smaller commuter aeroplane, if not fitted as a conventional passenger aeroplane with a Class D cargo compartment, could be equipped with only a Class A cargo compartment, usually positioned in the area adjacent to the flight deck.

1.3 FIRE EXTINGUISHERS

The most common fire extinguishers found on aircraft are those which have halon (BCF), halon replacement, dry agent, carbon dioxide (CO_2) or water as the firefighting agent. All these types may not be present on any one aircraft. Guidance on the use of the fire extinguishers is contained in the operations manual and may also appear on the extinguishers themselves. The emergency response drills, described in Section 4, indicate which firefighting agents should be used and the instances where the use of water is considered dangerous.

1.4 OXYGEN EQUIPMENT

Fixed and portable oxygen equipment is provided in pressurized aircraft for the use of the crew and passengers. The equipment available to the flight crew usually has a gas-tight mask and can supply 100 per cent oxygen. The equipment available to the cabin crew consists of portable oxygen bottles fitted with therapeutic masks. Additional passenger drop-down masks may be available for use by cabin crew in the passenger cabin and galley or lavatory areas. Both the passenger drop-down masks and the therapeutic masks are designed to allow a low flow of oxygen supplemented by air drawn in through valves or holes in the side of the mask. These masks are not intended to be gas-tight and, consequently, any toxic fumes or smoke present will be inhaled by passengers or crew using the masks. When smoke or fumes are present, or during firefighting, portable smoke hoods should be used to provide the necessary protection while supplying oxygen to the crew member.

1.5 ACCESSIBILITY OF DANGEROUS GOODS

Most dangerous goods bearing the “cargo aircraft only” label are required to be accessible in flight, except in cases identified in Part 7, Chapter 2 of the Technical Instructions.

1.6 EMERGENCY RESPONSE KIT

Some operators provide dangerous goods emergency response kits for use aboard aircraft and also provide training to crew members regarding the use of the kit in dangerous goods incidents. Typically, a dangerous goods emergency response kit contains:

1) large, good quality polyethylene bags;

2) bag ties; and

3) long rubber gloves.

When reference is made in this document to an “emergency response kit”, it is intended that the kit should be comprised of at least this equipment.

Note.— The word “polyethylene” as used in this manual has the same meaning as “polythene”.

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Section 2

GENERAL CONSIDERATIONS

2.1 GENERAL

The following are considerations which may need to be taken into account in assessing an appropriate course of action to take in the event of an incident involving dangerous goods. These considerations apply whether the aircraft involved is carrying passengers, cargo or both.

1) Consideration should always be given to landing as soon as possible. If the situation permits, the relevant air traffic services should be informed of the dangerous goods on board, as indicated in Part 7, Chapter 4 of the Technical Instructions.

2) The appropriate fire or smoke removal emergency procedure approved for the aircraft type should always be carried out. Flight crew oxygen mask and regulators must be on and selected to the 100 per cent oxygen position to prevent the inhalation of smoke or fumes. Using the appropriate smoke removal emergency procedures should reduce the concentration of any contamination and help to avoid recirculation of contaminated air. Air conditioning systems should be operated at maximum capacity and all cabin air vented overboard (no recirculation of air) in order to reduce the concentration of any contamination in the air and to avoid recirculation of contaminated air.

3) The rate of ventilation should not be reduced in an attempt to extinguish a fire, as this will have an incapacitating effect on the passengers without significantly affecting the fire. Passengers are likely to suffocate through lack of oxygen before a fire is extinguished. Passenger survival chances are greatly enhanced by ensuring maximum cabin ventilation.

4) Gas-tight breathing equipment should always be worn when attending an incident involving fire or fumes. The use of therapeutic masks with portable oxygen bottles or the passenger drop-out oxygen system to assist passengers in a smoke- or fume-filled cabin should not be considered, since considerable quantities of fumes or smoke would be inhaled through the valves or holes in the masks. A more effective aid to passengers in a smoke- or fume-filled environment would be the use of a wet towel or cloth held over the mouth and nose. A wet towel or cloth aids in filtering and is more effective at doing this than a dry towel or cloth. Cabin crew should take prompt action if smoke or fumes develop and move passengers away from the area involved and, if necessary, provide wet towels or cloths and give instructions to breathe through them.

5) In general, water should not be used on a spillage or when fumes are present, since it may spread the spillage or increase the rate of fuming. Consideration should also be given to the possible presence of electrical components when using water extinguishers, but see 10).
6) Besides the mandatory emergency equipment that is carried on an aircraft and the emergency response kit provided by some operators, many other items can be found that can be put to good use. These may include, but are not limited to:

   — bar or catering boxes;
   — oven gloves
   — fire-fighting gloves;

— polyethylene bags;
— blankets;
— towels; and
— fire containment devices/kits etc.

7) Hands should always be protected before touching suspicious packages or bottles. Rubber gloves or oven gloves covered by polyethylene bags are likely to give suitable protection.

8) Throughout this document, the term “fire-fighting gloves” describes gloves that are specifically designed for fire-fighting in the cabin or flight deck, rather than cleaning up spills or handling food. These gloves should be properly tested and rated to address fires likely to occur on an aircraft, such as fires involving lithium batteries.

9) Care should always be taken when mopping up any spillage or leakage to ensure there will be no reaction between what is to be used for mopping up and the dangerous goods. If it appears there could be a reaction, mopping up should not be attempted but the spillage should be covered with polyethylene bags. If polyethylene bags are not available, care should be taken to ensure there will be no reaction between whatever is used to contain the item and the item itself.

10) In case of a spill of known or suspected dangerous goods in powder form, everything affected should be left undisturbed. This type of spill should not be covered with a fire agent or diluted with water. Passengers should be moved away from the area. Switching off recirculation fans should be considered. The area of the spillage should be covered using polyethylene or other plastic bags and blankets. The area should be kept isolated. After landing, only qualified specialists should deal with the situation.

11) If a fire has been dealt with successfully and it is obvious that inner packagings are intact, consideration should be given to using water to cool the packages and thus avoid the possibility of reignition, but see 6).

12) Smoking should be prohibited when fumes or vapours are present.

13) In any incident in which rescue and firefighting (RFF) personnel come to the aircraft, either when dangerous goods are the cause of the incident or when dangerous goods are being carried on the aircraft and are not directly involved in the incident, a procedure should be established to ensure that the pilot-in-command’s dangerous goods notification form is immediately made available to the RFF services. Such a procedure might require the first flight crew member to leave the aircraft in the event of an emergency evacuation to deliver the pilot-in-command’s notification to the senior member of the RFF personnel.

14) If an incident involves a chemical substance which can be identified (by the UN proper shipping name or number, or by any other means), it may be possible, in some circumstances, to obtain helpful information from the various national chemical databanks. These databanks normally maintain 24-hour telephone accessibility and so can be reached by a phone-patch procedure. Examples of such databanks are:

United States – CHEMTREC
www.chemtrec.com

Canada – CANUTEC
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2.2 DANGEROUS GOODS IN THE PASSENGER CABIN

Apart from the exceptions listed in Part 8 of the Technical Instructions, dangerous goods are not permitted in the passenger cabin or on the flight deck. Nevertheless, dangerous goods may be carried into the cabin by passengers who are unaware of, or deliberately ignore, the requirements of the Technical Instructions concerning passengers and their baggage. It is also possible that an item to which a passenger is legitimately entitled (such as an item for medical purposes) may cause an incident.

To enable cabin crew to respond to an incident involving dangerous goods, the operator should equip its aircraft with firefighting and protective equipment, to include an adequate water supply and fire-fighting gloves that are rated to withstand the heat produced by lithium battery thermal runaway events. Some operators provide fire containment equipment for use by crew members as part of the procedures for battery / portable electronic device (PED) fire. The operator should develop detailed procedures for the use of all equipment provided and crews should be trained accordingly. Manufacturer's instructions and guidance should be considered in developing emergency response procedures. Manufacturer's claims of effectiveness should be verified by the airline or third party testing and should meet applicable industry standards.

Firefighting procedures should include precautions for the safety of the crew members involved. These should include the correct use of protective equipment, appropriate and relevant to the immediate risks presented by the stage to which the fire or thermal runaway has progressed. Unprotected firefighting should be minimized where possible.

Equipment should be placed in a suitable location(s) easily accessible by the cabin crew, taking into account the various configurations of the aircraft (such as multi deck, crew rest areas). Cabin crew members should be drilled and capable of using the specific equipment carried on board the operator's aircraft.

Note.— See 3.3 and 3.4 – Cabin crew procedures for dangerous goods incidents in the passenger cabin during flight.

2.3 DANGEROUS GOODS IN THE FLIGHT DECK

The flight crew's primary responsibility is the safe control of the aircraft. An immediate and decisive response to a dangerous goods incident that could impact the flight crew's ability to safely control the aircraft is therefore essential. The initial response should be to move the item involved in the incident from the flight deck to the cabin, if operationally feasible. This is especially critical for incidents involving a battery or a device containing a battery in thermal runaway because of the amount of smoke produced and the potential for a resulting fire to quickly become uncontrollable in a confined space. At the first signs of malfunction – such as slight bulging, screen discoloration, unusual odor, or excessive heat – priority should be given to the prompt removal of the device from the flight deck, if operationally feasible. Flight crew may act independently or request cabin crew assistance, when available, to manage fire on the flight deck.

2.4 DANGEROUS GOODS IN THE UNDERFLOOR CARGO COMPARTMENTS

Dangerous goods may be carried as cargo in the underfloor cargo compartments. Spillages or leakages are unlikely to be detected during flight unless they cause noticeable fumes in the passenger cabin or on the flight deck. In the event of leakage, the air in the passenger cabin and on the flight deck may have become flammable, irritating or toxic. Non-essential electrics should be turned off and smoking should be prohibited. Also, the crew should use full face masks, (100 per cent oxygen) or smoke hoods. Wherever

possible, the passengers should be provided with wet towels or cloths for use over the nose and mouth.

Smoke or fire in an underfloor cargo compartment may not have originated from any dangerous goods loaded in that compartment. Such goods, however, may be affected by any fire. Standard aircraft emergency procedures should always be followed to deal with the smoke or fire.

In some aircraft there is access from inside the aircraft to underfloor Class D cargo compartments. In general, even if access is possible, an entry should not be made since this will allow air to enter the compartment, which may worsen the situation.

If an incident has arisen in an underfloor cargo compartment, the passengers and crew should be evacuated from the aircraft before any attempt is made to open the cargo compartment doors. The cargo compartment doors should be opened with the emergency services in attendance.

2.4 DANGEROUS GOODS ON THE MAIN DECK OF "COMBI" AIRCRAFT

Note.— A "combi" aircraft is one in which both cargo and passengers are carried on the main deck.

Spillages or leakages of dangerous goods which cause fumes may be detected in the passenger cabin or on the flight deck. Smoke or fire which is detected may not have originated from any dangerous goods which are loaded in the cargo compartment but those goods may be affected by any fire.

The recommended aircraft emergency procedures for smoke and fire should always be followed. However, any action taken to evacuate smoke may not necessarily help to control a fire. Care must be taken to ensure the proper checklists are used since some smoke removal checklists are only for a transient generation of smoke and not for removing smoke from a continuous production source.

Although it may be possible to enter the cargo compartment from inside the aircraft, this should be done with great care so as not to allow smoke or fumes to enter the passenger cabin or flight deck.

However, if the decision is taken to enter the cargo compartment and the cause of the incident is discovered to be dangerous goods, reference should be made to Section 4 of this document, which contains a list of dangerous goods and the relevant emergency response drills and gives guidance for dealing with the incident.

Smoke or fumes may enter the passenger cabin or flight deck. If this happens, the crew should assume that the aircraft's atmosphere has possibly become contaminated with irritating, flammable or toxic fumes and appropriate action should be taken. This should include the use by the crew of full face masks (100 per cent oxygen) or smoke hoods, as appropriate. Wherever possible, passengers should be provided with wet towels or cloths with instructions to place them over the nose and mouth. All non-essential electrics should be turned off and smoking should be prohibited. Smoke evacuation emergency procedures should be carried out as soon as possible to ventilate the cabin to the maximum extent possible.

If an incident has arisen in a main deck cargo compartment, the passengers and crew should be evacuated from the aircraft before any attempt is made to open the cargo compartment doors. The cargo compartment doors should be opened with the emergency services in attendance.

2.5 DANGEROUS GOODS ON CARGO AIRCRAFT

Dangerous goods may be carried on cargo aircraft in either the underfloor cargo compartments or on the main deck.

Incidents in an underfloor cargo compartment. See 2.3.

Incidents in the main deck cargo compartment. Dangerous goods carried on the main deck of a cargo aircraft fall into two broad categories:

a) those which are permitted either for carriage on a passenger aircraft, or which are cargo aircraft only (CAO) dangerous goods or quantities not subject to additional loading requirements applicable to other CAO dangerous goods. Depending on the circumstances (position on main deck, types of unit load devices (ULDs) used, etc.), these may be completely inaccessible.

b) those which may only be carried on a cargo aircraft and are subject to additional loading requirements which are set out in Part 7;2.4.1 of the Technical Instructions. These dangerous goods may be required to be accessible which means they must be loaded so that the crew can handle and, where size and mass permit, separate such packages or overpacks from other cargo. In the event of an incident involving these dangerous goods, an assessment will have to be made of the practicality of attempting direct physical intervention. In any event, both for accessible and non-accessible dangerous goods, standard aircraft emergency procedures should always be followed.

An attempt should be made to establish the cause of an incident occurring on the main deck. The following actions can be considered:

— Attempt to locate the source of the incident and identify whether there are fumes or smoke or evidence of spillage or leakage.

— Follow the appropriate aircraft emergency procedures for fire or for smoke removal if fumes or smoke are present.

— Identify the dangerous goods involved and use the notification to pilot-in-command (see Technical Instructions, Part 7, Chapter 4) to determine the proper shipping name and/or UN or ID number of the goods.

— After establishing the identity of the dangerous goods, refer to Section 4 and from either the alphabetical or numerical list of dangerous goods note the drill assigned to the particular item.

— Refer to the chart in Section 4 and use the guidance given according to the appropriate emergency response drill to deal with the incident.

———————

Section 3

EXAMPLES OF DANGEROUS GOODS INCIDENT PROCEDURES

Operators should use these example procedures to develop specific procedures that take into account the type of aircraft, type of operation, and available emergency response equipment. A risk-based approch should be used to support the development of the specific procedures.

Note 1.— The terms fire, smoke, fumes and flames are referred to throughout these procedures. When "fire" is referred to on its own, it is intended to capture any of the other events. When "smoke", "fumes" or "flames' are specifically referred to, it is intended to highlight that specific hazard.

Note 2.— The following procedures are composed of numbered steps. In some cases, the steps are sequential, while in others the steps can occur simultaneously, by one or more crew members, or in a different order. Operators must consider the specifics of their operation before adapting them into their own procedures.

3.1 FLIGHT CREW PROCEDURES FOR DANGEROUS GOODS INCIDENTS

Step	*Flight crew action*
1.	**FOLLOW THE APPROPRIATE AIRCRAFT EMERGENCY PROCEDURES FOR SMOKE, FUMES or FLAME REMOVAL**
2.	**NO SMOKING SIGN ON**
3.	**CONSIDER LANDING AS SOON AS POSSIBLE**
4.	**CONSIDER TURNING OFF NON-ESSENTIAL ELECTRICAL POWER**
5.	**DETERMINE SOURCE OF SMOKE / FUMES / FLAMES**
6.	**FOR DANGEROUS GOODS INCIDENTS IN THE PASSENGER CABIN, SEE CABIN CREW PROCEDURES AND COORDINATE COCKPIT / CABIN CREW ACTIONS**
7.	**DETERMINE EMERGENCY RESPONSE DRILL CODE**
8.	**USE GUIDANCE FROM AIRCRAFT EMERGENCY RESPONSE DRILLS CHART TO HELP DEAL WITH INCIDENT**
9.	**IF THE SITUATION PERMITS, NOTIFY ATC OF THE DANGEROUS GOODS BEING CARRIED**
After landing	
1.	**DISEMBARK PASSENGERS AND CREW BEFORE OPENING ANY CARGO COMPARTMENT DOORS**

Step	*Flight crew action*
2.	**INFORM GROUND PERSONNEL / EMERGENCY SERVICES OF NATURE OF ITEM AND WHERE STOWED**
3.	**MAKE APPROPRIATE ENTRY IN MAINTENANCE LOG**

3.2 AMPLIFIED FLIGHT CREW PROCEDURES FOR DANGEROUS GOODS INCIDENTS

Amplified flight crew procedures for dangerous goods incidents	
Step	*Flight crew action*
1.	**FOLLOW THE APPROPRIATE AIRCRAFT EMERGENCY PROCEDURES FOR SMOKE, FUMES, OR FLAMES REMOVAL** (self-explanatory)
2.	**NO SMOKING SIGN ON** Smoking should be prohibited when fumes or vapours are present and for the remainder of the flight.
3.	**CONSIDER LANDING AS SOON AS POSSIBLE** Because of the difficulties and possibly disastrous consequences of any dangerous goods incident, consideration should be given to landing as soon as possible. The decision to land at the nearest suitable aerodrome should be made early rather than late, when an incident may have developed to a very critical point, severely restricting operational flexibility.
4.	**CONSIDER TURNING OFF NON-ESSENTIAL ELECTRICAL POWER** As the incident may be caused by electrical problems or as electrical systems may be affected by any incident, and particularly as firefighting activities, etc., may damage electric systems, turn off all non-essential electrical items. Retain power only to those instruments, systems and controls necessary for the continued safety of the aircraft. Do not restore power until it is positively safe to do so.
5.	**DETERMINE SOURCE OF SMOKE / FUMES / FLAMES** The source of any fire may be difficult to determine. Effective firefighting or containment procedures can best be accomplished when the source of the incident is identified.
6.	**FOR DANGEROUS GOODS INCIDENTS IN THE PASSENGER CABIN, SEE CABIN CREW PROCEDURES AND COORDINATE COCKPIT / CABIN CREW ACTIONS** Incidents in the passenger cabin should be dealt with by the cabin crew using the appropriate procedures. It is essential that the cabin crew and the flight crew coordinate their actions and that each be kept fully informed of the other's actions and intentions.

Amplified flight crew procedures for dangerous goods incidents	
Step	*Flight crew action*
7.	**DETERMINE EMERGENCY RESPONSE DRILL CODE** When the item has been identified, the corresponding entry on the pilot-in-command's dangerous goods notification form should be found. The applicable emergency response drill code may be given on the notification form, or if not given, can be found by noting the proper shipping name or the UN number on the notification form and using the alphabetical or numerical list of dangerous goods. If the item causing the incident is not listed on the notification form, an attempt should be made to determine the name or the nature of the substance. The alphabetical list can then be used to determine the emergency response drill code. *Note.— The alphabetical and numerical lists referred to are those in Section 4 of this document.*
8.	**USE GUIDANCE FROM AIRCRAFT EMERGENCY RESPONSE DRILLS CHART TO HELP DEAL WITH INCIDENT** The drill code assigned to an item of dangerous goods consists of a number plus one or two letters. Referring to the chart of emergency response drills, each drill number corresponds to a line of information concerning the hazard posed by that substance and guidance on the preferable action that should be taken. The drill letter is shown separately on the drill chart; it indicates other possible hazards of the substance. In some cases, the guidance given by the drill number may be further refined by the information given by the drill letter.
9.	**IF THE SITUATION PERMITS, NOTIFY ATC OF THE DANGEROUS GOODS BEING CARRIED** If an in-flight emergency occurs and the situation permits, the pilot-in-command should inform the appropriate air traffic services unit of the dangerous goods on board the aircraft. Wherever possible this information should include the proper shipping name and/or UN number, the class/division and for Class 1 the compatibility group, any identified subsidiary hazard(s), the quantity and the location on board the aircraft. When it is not considered possible to include all the information, those parts thought most relevant in the circumstances should be given.

Amplified flight crew procedures for dangerous goods incidents	
Step	*Flight crew action*
After landing	
1.	**DISEMBARK PASSENGERS AND CREW BEFORE OPENING ANY CARGO COMPARTMENT DOORS** Even if it has not been necessary to complete an emergency evacuation after landing, passengers and crew should disembark before any attempt is made to open the cargo compartment doors and before any further action is taken to deal with a dangerous goods incident. The cargo compartment doors should be opened with the emergency services in attendance.
2.	**INFORM GROUND PERSONNEL / EMERGENCY SERVICES OF NATURE OF ITEM AND WHERE STOWED** Upon arrival, take the necessary steps to identify to the ground staff where the item is stowed. Pass on by the quickest available means all information about the item including, when appropriate, a copy of the notification to pilot-in-command.
3.	**MAKE APPROPRIATE ENTRY IN MAINTENANCE LOG** An entry should be made in the maintenance log that a check needs to be carried out to ensure that any leakage or spillage of dangerous goods has not damaged the aircraft structure or systems and that some aircraft equipment (such as fire extinguishers, emergency response kit) may need replenishing or replacing.

3.3 CABIN CREW PROCEDURES FOR DANGEROUS GOODS INCIDENTS IN THE PASSENGER CABIN DURING FLIGHT

This section consists of cabin crew procedures for dangerous goods incidents in the passenger cabin during flight involving:

a) battery / portable electronic device (PED) fire (see 3.3.1);

b) overhead bin battery / portable electronic device (PED) fire (see 3.3.2);

c) overheated battery / electrical smell involving a portable electronic device (PED) – no visible flame or smoke (see 3.3.3);

d) PED fallen into / trapped in a passenger seat (see 3.3.4);

e) battery / portable electronic device (PED) fire on the flight deck (see 3.3.5);

f) fire involving dangerous goods (see 3.3.6); and

g) spillage or leakage of dangerous goods (see 3.3.7)

Note 1.— Although this guidance material presents sequences of tasks, some of these actions occur simultaneously when carried out by crew members in a multi-cabin crew operation.

Note 2.— The operator should ensure its aircraft are equipped with appropriate firefighting and protective equipment for use by crew members.

Note 3.— The operator should ensure the crew is trained to use all firefighting and protective equipment including the donning and removal of protective equipment. Firefighting procedures should include precautions for the safety of the crew member(s) involved. These should include the correct use of protective equipment that is appropriate and relevant to the immediate risks presented by the stage to which the fire or thermal runaway has progressed. Unprotected firefighting should be minimized where possible.

Note 4.— In a single cabin crew member operation, some of the actions listed in this section should be carried out with the assistance of other persons (e.g., able-bodied passengers). The operating cabin crew member should assign those persons to communicate with the flight crew and provide back-up, while the cabin crew member fights the fire.

Note 5.— The terms fire, smoke, fumes and flames are referred to throughout these procedures. When "fire" is referred to on its own, it is intended to capture any of the other events. When "smoke", "fumes" or "flames' are specifically referred to, it is intended to highlight that specific hazard.

3.3.1 Battery / portable electronic device (PED) fire

Procedures for battery / portable electronic device (PED) fire	
Step	*Cabin crew action*
1.	**IDENTIFY THE SOURCE OF THE FIRE**
2.	**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS**

Procedures for battery / portable electronic device (PED) fire	
Step	*Cabin crew action*
3.	**APPLY FIREFIGHTING PROCEDURE TO EXTINGUISH FLAMES**
4.	**REMOVE POWER**
5.	**POUR WATER (OR OTHER NON-FLAMMABLE LIQUID) ON THE DEVICE**
6.	**OBTAIN A SUITABLE EMPTY CONTAINER**
7.	**SUBMERGE THE DEVICE IN WATER (OR OTHER NON-FLAMMABLE LIQUID) IN THE CONTAINER**
8.	**STOW AND SECURE (IF POSSIBLE) THE CONTAINER TO PREVENT SPILLAGE**
9.	**MONITOR THE DEVICE AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT**
10.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION**

3.3.2 Overhead bin battery / portable electronic device (PED) fire

Overhead bin battery / portable electronic device (PED) fire	
Step	*Cabin crew action*
1.	**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS**
2.	**APPLY FIREFIGHTING PROCEDURE TO EXTINGUISH FLAMES**
3.	**IDENTIFY THE SOURCE OF THE FIRE**
4.	**REMOVE POWER**
5.	**POUR WATER (OR OTHER NON-FLAMMABLE LIQUID) ON THE DEVICE (BAGGAGE)**
6.	**OBTAIN A SUITABLE EMPTY CONTAINER**
7.	**SUBMERGE THE DEVICE IN WATER (OR OTHER NON-FLAMMABLE LIQUID), IN THE CONTAINER**
8.	**STOW AND SECURE (IF POSSIBLE) THE CONTAINER TO PREVENT SPILLAGE**
9.	**MONITOR THE DEVICE AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT**
10.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION**

3.3.3 Overheated battery / electrical smell involving a portable electronic device (PED) – no visible flame or smoke

Procedures for overheated battery / electrical smell involving a portable electronic device (PED) – no visible flame or smoke	
Step	*Cabin crew action*
	If there are signs of fire (smoke, fumes, flames), **APPLY PROCEDURES FOR BATTERY/PED FIRE (SEE 3.3.1)**
1.	**IDENTIFY THE ITEM**
2.	**INSTRUCT THE PASSENGER TO TURN OFF THE DEVICE IMMEDIATELY**
3.	**REMOVE POWER**
4.	**INSTRUCT THE PASSENGER TO KEEP THE DEVICE VISIBLE AND MONITOR CLOSELY**
5.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION**

3.3.4 PORTABLE ELECTRONIC DEVICE (PED) fallen into / trapped in a passenger seat – no visible flame or smoke

Procedures for PED fallen into / trapped in a passenger seat – no visible flame or smoke	
Step	*Cabin crew action*
	If there are signs of fire (smoke, fumes, flames), **APPLY PROCEDURES FOR BATTERY/PED FIRE (SEE 3.3.1)**
1.	**OBTAIN INFORMATION FROM THE PASSENGER**
2.	**RETRIEVE AND USE PROTECTIVE EQUIPMENT**
3.	**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS**
4.	**RETRIEVE THE ITEM, IF SAFE TO DO SO**
5.	**MONITOR THE SEAT AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT**.
6.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION**

3.3.5 BATTERY / PORTABLE ELECTRONIC DEVICE (PED) FIRE ON THE FLIGHT DECK

Procedures for battery / PED fire on the flight deck	
Step	*Cabin crew action*
1.	**RECOGNIZE SIGNAL FOR FIRE ON THE FLIGHT DECK**
2.	**APPLY FIREFIGHTING PROCEDURE TO EXTINGUISH FLAMES**

Procedures for battery / PED fire on the flight deck	
Step	*Cabin crew action*
3.	**POUR WATER (OR OTHER NON-FLAMMABLE LIQUID) ON THE DEVICE**
4.	**REMOVE THE DEVICE FROM THE FLIGHT DECK**
5.	**CLOSE THE FLIGHT DECK DOOR**
6.	**APPLY PROCEDURES FOR BATTERY / PED FIRE (see 3.3.1)**
7.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION**

Note.— Procedures presented in this section are not applicable to incidents involving electronic flight bags (EFBs) that cannot be removed from the flight deck (e.g. installed via airworthiness approval).

3.3.6 Fire involving dangerous goods

Procedures for fire involving dangerous goods	
Step	*Cabin crew action*
1.	**IDENTIFY THE ITEM**
2.	**APPLY FIREFIGHTING PROCEDURE**
3.	**MONITOR FOR ANY INDICATION OF-REIGNITION**
4.	**APPLY PROCEDURES FOR SPILLAGE OR LEAKAGE OF DANGEROUS GOODS, IF REQUIRED, ONCE THE FIRE HAS BEEN EXTINGUISHED** (see 3.3.7).
5.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION**

3.3.7 Spillage or leakage of dangerous goods

Procedures for spillage or leakage of dangerous goods	
Step	*Cabin crew action*
1.	**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS**
2.	**IDENTIFY THE ITEM**
3.	**COLLECT EMERGENCY RESPONSE KIT OR OTHER USEFUL ITEMS**
4.	**RETRIEVE AND USE PROTECTIVE EQUIPMENT**
5.	**MOVE PASSENGERS AWAY FROM AREA AND DISTRIBUTE WET TOWELS OR CLOTHS**

Procedures for spillage or leakage of dangerous goods	
Step	*Cabin crew action*
6.	**PLACE DANGEROUS GOODS ITEM IN POLYETHYLENE BAGS**
7.	**STOW POLYETHYLENE BAGS**
8.	**TREAT AFFECTED SEAT CUSHIONS / COVERS IN THE SAME MANNER AS DANGEROUS GOODS ITEM**
9.	**COVER SPILLAGE ON CARPET / FLOOR**
10.	**MONITOR ITEMS STOWED AWAY / CONTAMINATED FURNISHINGS**
11.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION**

3.4 AMPLIFIED CABIN CREW PROCEDURES FOR DANGEROUS GOODS INCIDENTS IN THE PASSENGER CABIN DURING FLIGHT

This section consists of amplified cabin crew procedures for dangerous goods incidents in the passenger cabin during flight involving:

a) battery / portable electronic device (PED) fire (see 3.4.1);

b) overhead bin battery / portable electronic device (PED) fire (see 3.4.2);

c) overheated battery / electrical smell involving a portable electronic device (PED) – no visible flame or smoke (see 3.4.3);

d) portable electronic device (PED) fallen into / trapped in a passenger seat (see 3.4.4);

e) battery / portable electronic device (PED) fire on the flight deck (see 3.4.5);

f) fire involving dangerous goods (see 3.4.6); and

g) spillage or leakage of dangerous goods (see 3.4,7).

3.4.1 Battery / portable electronic device (PED) fire

Amplified procedures for battery / portable electronic device (PED) fire	
Step	*Cabin crew action*
1.	**IDENTIFY THE SOURCE OF THE FIRE** It may not be possible for cabin crew to identify the item (source of fire) right away, especially if the fire has started in a passenger bag. Identify the location and any other appropriate details of the hazard. Bring appropriate equipment and protective equipment to the area to assist with finding the source and to prepare for firefighting.
2.	**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS** During any occurrence concerning a fire in the cabin, the cabin crew should notify to the pilot-in-command immediately and keep the flight crew informed of all actions taken and of the effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each is kept fully informed of the other's actions and intentions. Minimizing the spreading of smoke and fumes into the flight deck is critical for the continued safe operation of the aircraft, therefore it is essential to keep the flight deck door closed at all times. Crew communication and coordination are of utmost importance. The use of the interphone is the primary means of communication between crew members, unless the interphone system fails.

Amplified procedures for battery / portable electronic device (PED) fire	
Step	*Cabin crew action*
3.	**APPLY FIREFIGHTING PROCEDURES TO EXTINGUISH FLAMES** a) use appropriate protective equipment; b) use appropriate firefighting equipment; c) extinguish flames; and d) manage passengers and cabin, as required. It is important that cabin crew use protective equipment (such as protective breathing equipment and fire-fighting gloves) when fighting a fire. Cabin crew should use halon, halon replacement, or water to extinguish the flames. This should be accomplished as soon as possible to prevent the flames from spreading to additional flammable materials. Halon and halon replacement fire extinguishers are optimal for the extinguishing of flames or when other nearby materials have become involved in the fire, but do not provide any cooling properties to the battery. It is important to move past this step to the cooling step as soon as possible once flames are gone. If deemed more efficient or expedient, water may be used instead of halon for knocking down small flames and imparting a cooling effect in one step. It is critical that once any flames are extinguished that the cabin crew progress to apply Step 4 (Pour water on the device in place). It is important that cabin crew use protective equipment (such as protective breathing equipment and fire-resistant gloves) when fighting a fire. Cabin crew should move passengers away from the area involved and, if necessary, provide wet towels or cloths and give instructions for passengers to breathe through them. **Caution:** In certain firefighting situations cabin crew may assess and deem it necessary to slightly open baggage to allow entry of the extinguishing agent and non-flammable liquid. To avoid injury from a flash fire, cabin crew should use caution when opening the affected baggage when there is any indication of smoke or flames. This should only be done after donning appropriate protective equipment.

Amplified procedures for battery / portable electronic device (PED) fire	
Step	*Cabin crew action*
4.	**REMOVE POWER** a) Disconnect the device from the power supply, if safe to do so. b) Turn off in-seat power, if applicable. c) Verify that power to the remaining electrical outlets remains off, if applicable. **Caution:** Do not attempt to remove the battery from the device. It is important that cabin crew instruct the passenger to disconnect the device from the power supply, if it is deemed safe to do so. A battery has a higher likelihood of catching fire due to overheating during or immediately following a charging cycle, although the effects may be delayed for some period of time. By removing the external power supply from the device, it will be assured that additional energy is not being fed to the battery to promote a fire. Cabin crew should turn off the in-seat power to the remaining electrical outlets until it can be assured that a malfunctioning aircraft system does not contribute to additional failures of the passengers' portable electronic devices. Cabin crew should visually check that power to the remaining electrical outlets remains off until the aircraft's system can be determined to be free of faults, if the device was previously plugged in. The removal of power may occur simultaneously to other cabin crew actions (such as obtaining water to pour on the device). Depending on the aircraft type, in-seat power may have to be turned off by the fight crew.
5.	**POUR WATER (OR OTHER NON-FLAMMABLE LIQUID) ON THE DEVICE** If the device is smoking but does not show signs of flame, water needs to be applied to cool the device and prevent flames. Use water (or other non-flammable liquid) to cool a battery that has ignited to prevent the spread of heat to other cells in the battery. Pour liquid onto the device until signs of steam and crackling have subsided completely. *Liquid may turn to steam when applied to the hot battery.* The action of pouring water or non-flammable liquid on the device cools the device and can prevent thermal runaway from propagating to nearby cells. It may also lower the risk of a cell that is venting, but not yet in full thermal runaway, from reacting more violently. A battery involved in a fire can reignite and emit flames multiple times as heat is transferred to other cells in the battery. Therefore, cabin crew should monitor the device regularly to identify if there is any indication that a fire hazard may still exist. If there is any smoke or indication of fire, crew should pour more water (or other non-flammable liquid) on the device. Monitor for any indication of reignition and continue to pour water (or other non-flammable liquid) on the device.

Amplified procedures for battery / portable electronic device (PED) fire	
Step	*Cabin crew action*
	Caution: a) Do not attempt to pick up or move the device until completing this step; batteries may explode or burst into flames without warning. The device should not be moved if displaying any of the following: flames/flaring, smoke, unusual sounds (such as crackling), debris, or shards of material separating from the device. b) Do not cover or enclose the device as it could cause it to overheat. c) Do not use ice or dry ice to cool the device. Ice or other materials insulate the device, increasing the likelihood that additional battery cells will reach thermal runaway.
6.	**OBTAIN A SUITABLE EMPTY CONTAINER** A suitable empty container may include a pot, jug, galley unit or lavatory waste bin, or fire containment equipment (only when they are designed to contain water). When selecting a suitable empty container, cabin crew should consider the size of the device to be submerged in it. Cabin crew should select a container which can be filled with enough liquid to completely submerge the device.
7.	**PLACE THE DEVICE IN THE CONTAINER AND COMPLETELY SUBMERGE IN WATER (OR OTHER NON-FLAMMABLE LIQUID), USING PROTECTIVE EQUIPMENT** It is important that cabin crew wear protective equipment such as protective breathing equipment and fire-fighting gloves when moving any device involved in a fire. Place the device in the container and pour water or a non-flammable liquid into the container until the device is completely submerged. It is also possible to put the device in the container once the container already contains water. Efforts should be taken to minimize splashing of water in the aircraft when dropping the device in a container that already contains water.
8.	**STOW AND SECURE (IF POSSIBLE) THE CONTAINER TO PREVENT SPILLAGE** Once the device is completely submerged, cabin crew should stow the container and, if possible, secure it to prevent spillage.
9.	**MONITOR THE DEVICE AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT** Cabin crew should monitor the device and the surrounding area for the remainder of the flight to verify that the device does not pose further hazard.

Amplified procedures for battery / portable electronic device (PED) fire	
Step	*Cabin crew action*
10.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION** Upon arrival, cabin crew should apply the operator's post-incident procedures. These should include identifying to ground personnel where the item is stowed and providing relevant information about the item. Crew need to complete the required documentation, as per operator procedures, so that the operator is able to comply with mandatory reporting requirements and can ensure, proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

3.4.2 Overhead bin battery / portable electronic device (PED) fire / smoke

Amplified procedures for overhead bin battery / portable electronic device (PED) fire / smoke	
Step	*Cabin crew action*
1.	**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS** During any occurrence concerning a fire in the cabin, the cabin crew should notify the pilot-in-command immediately and keep the flight crew informed of all actions taken and of the effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each is kept fully informed of the other's actions and intentions. Minimizing the spreading of smoke and fumes into the flight deck is critical for the continued safe operation of the aircraft, therefore it is essential to keep the flight deck door closed until the hazard is no longer present. Crew communication and coordination are of utmost importance. The use of the interphone is the primary means of communication between crew members, unless the interphone system fails.

Amplified procedures for overhead bin battery / portable electronic device (PED) fire / smoke	
Step	*Cabin crew action*
2.	**APPLY FIREFIGHTING PROCEDURE TO EXTINGUISH FLAMES** a) use appropriate protective equipment; b) use appropriate firefighting equipment; c) extinguish flames; and d) manage passengers and cabin, as required. It is important that cabin crew use protective equipment (such as protective breathing equipment and fire-fighting gloves) when fighting a fire. Use halon, halon replacement, or water to extinguish the flames. This should be accomplished as soon as possible to prevent the flames from spreading to additional flammable materials. Halon and halon replacement fire extinguishers are optimal for the extinguishing of flames or when other nearby materials have become involved in the fire, but do not provide any cooling properties to the battery. It is important to move past this step to the cooling step as soon as possible once flames are gone. If deemed more efficient or expedient, water may be used instead of halon for knocking down small flames and imparting a cooling effect in one step. It is critical that once any flames are extinguished that the cabin crew progress to apply Step 4 (Pour water on the device in place). Due to the weight and size of some overhead bins, and their opening movement, the cabin crew member who is fighting the fire may require assistance in opening and controlling the overhead bin. When fighting an overhead bin fire, the cabin crew member should position themselves at the opposite end of the overhead bin, where the smoke / flames are visible. This action prevents further spreading embers due to the force of the extinguishing agent as it is discharged and comes into contact with the overhead bin. Cabin crew should take prompt action to move passengers away from the area involved and, if necessary, provide wet towels or cloths and give instructions for passengers to breathe through them. *Note.— If the origin of the fire / smoke cannot be confirmed visually, cabin crew should use the back of the hand to search for hot overhead bin surfaces.* **Caution:** 1) Use the back of the hand and not the palm of the hand to search for hot overhead bin surfaces, because the back of the hand is more sensitive to temperature differences. 2) In certain firefighting situations cabin crew may assess and deem it necessary to slightly open baggage to allow entry of the extinguishing agent and non-flammable liquid. To avoid injury from a flash fire, cabin crew should use caution when opening the affected baggage when there is any indication of smoke or flames. This should only be done after donning appropriate protective equipment.

Amplified procedures for overhead bin battery / portable electronic device (PED) fire / smoke	
Step	*Cabin crew action*
3.	**IDENTIFY THE SOURCE OF THE FIRE** If the device is visible and accessible or if the device is contained in baggage and flames are visible: a) reapply Step 2 to extinguish the flames, if applicable; and b) apply Steps 4 to 10. If smoke is coming from the overhead bin, but the device is not visible or accessible,: a) remove other baggage from the overhead bin to access the affected baggage/item; b) identify the item; c) apply Steps 4 to 10. It may not be possible for cabin crew to identify the item (source of fire or smoke) right away, especially if the fire has started in an overhead bin or the device is not readily accessible.

Amplified procedures for overhead bin battery / portable electronic device (PED) fire / smoke	
Step	*Cabin crew action*
4.	**POUR WATER (OR OTHER NON-FLAMMABLE LIQUID) ON THE DEVICE (BAGGAGE)** If the device is smoking but does not show signs of flame, water needs to be applied to cool the device and prevent flames. Use water (or other non-flammable liquid) to cool a battery that has ignited to prevent the spread of heat to other cells in the battery. Pour liquid onto the baggage or device until signs of steam and crackling have subsided completely. Liquid may turn to steam when applied to the hot battery. The action of pouring water or non-flammable liquid on the device cools the device and can prevent thermal runaway from propagating to nearby cells. It may also lower the risk of a cell that is venting, but not yet in full thermal runaway, from reacting more violently. A battery involved in a fire can reignite and emit flames multiple times as heat is transferred to other cells in the battery. Therefore, cabin crew should monitor the device regularly to identify if there is any indication that a fire hazard may still exist. If there is any smoke or indication of fire, crew should pour more water (or other non-flammable liquid) on the device. Monitor for any indication of reignition and continue to pour water (or other non-flammable liquid) on the device. Caution: a) Do not attempt to pick up or move the device until completing this step; batteries may explode or burst into flames without warning. The device should not be moved if displaying any of the following: flames/flaring, smoke, unusual sounds (such as crackling), debris, or shards of material separating from the device. b) Do not cover or enclose the device as it could cause it to overheat. c) Do not use ice or dry ice to cool the device. Ice or other materials insulate the device, increasing the likelihood that additional battery cells will reach thermal runaway.
5.	**OBTAIN A SUITABLE EMPTY CONTAINER** A suitable empty container may include a pot, jug, galley unit or lavatory waste bin or fire containment equipment (only when they are designed to contain water). When selecting a suitable empty container, cabin crew should consider the size of the device to be submerged in it.Cabin crew should select a container which can be filled with enough liquid to completely submerge the device.

Amplified procedures for overhead bin battery / portable electronic device (PED) fire / smoke	
Step	*Cabin crew action*
6.	**PLACE THE DEVICE IN THE CONTAINER AND COMPLETELY SUBMERGE IN WATER (OR OTHER NON-FLAMMABLE LIQUID), USING PROTECTIVE EQUIPMENT** Place device in the container and pour water or a non-flammable liquid in the container until the device is completely submerged. It is also possible to put the device in the container once the device already contains water. Efforts should be taken to minimize splashing of water in the aircraft when dropping the device in a container that already contains water. It is important that cabin crew wear protective equipment (such as protective breathing equipment and firefighting gloves) when moving any device involved in a fire.
7.	**STOW AND SECURE (IF POSSIBLE) THE CONTAINER TO PREVENT SPILLAGE** Once the device is completely submerged, cabin crew should stow the container and, if possible, secure it to prevent spillage.
8.	**MONITOR THE DEVICE AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT** Cabin crew should monitor the device and the surrounding area for the remainder of the flight to verify that the device does not pose further hazard.
9.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION** Upon arrival, cabin crew should apply the operator's post-incident procedures. These should include identifying to ground personnel where the item is stowed and providing relevant information about the item. Crew need to complete the required documentation, as per operator procedures, so that the operator is able to comply with mandatory reporting requirements and can ensure proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

3.4.3 Overheated battery / electrical smell involving a portable electronic device (PED) – no visible flame or smoke

Amplified procedures for overheated battery / electrical smell involving a portable electronic device (PED) – no visible flame or smoke	
Step	*Cabin crew action*
	If there are signs of fire (smoke, fumes, flames), **APPLY PROCEDURES FOR BATTERY/PED FIRE (SEE 3.4.1)**
1.	**IDENTIFY THE ITEM** Cabin crew should identify the source of overheat or electrical smell or ask the passenger concerned to identify the item.
2.	**INSTRUCT THE PASSENGER TO TURN OFF THE DEVICE IMMEDIATELY** It is important that cabin crew instruct the passenger to turn off the device immediately and, if possible and safe to do so, to remove the power supply to prevent further overheating or a fire.
3.	**REMOVE POWER** a) Disconnect the device from the power supply, if safe to do so. b) Turn off in-seat power, if applicable. c) Verify that power to the remaining electrical outlets remains off, if applicable. d) Verify that the device remains off for the remainder of the flight **Caution:** Do not attempt to remove the battery from the device. It is important that cabin crew instruct the passenger to disconnect the device from the power supply, if it is deemed safe to do so. A battery has a higher likelihood of catching fire due to overheating during or immediately following a charging cycle, although the effects may be delayed for some period of time. By removing the external power supply from the device, it will be assured that additional energy is not being fed to the battery to promote a fire.
	Cabin crew should turn off the in-seat power to the remaining electrical outlets until it can be assured that a malfunctioning aircraft system does not contribute to additional failures of the passengers' portable electronic devices. Cabin crew should visually check that power to the remaining electrical outlets remains off until the aircraft's system can be determined to be free of faults, if the device was previously plugged in. Depending on the aircraft type, in-seat power may have to be turned off by the fight crew. It is important that cabin crew verify that the device remains turned off for the duration of the flight.

Amplified procedures for overheated battery / electrical smell involving a portable electronic device (PED) – no visible flame or smoke	
Step	*Cabin crew action*
4.	**INSTRUCT THE PASSENGER TO KEEP THE DEVICE VISIBLE AND MONITOR CLOSELY** The device should remain visible (not stowed such as in baggage or seat pocket or on a person (pocket)) and should be monitored closely. Unstable batteries may ignite even after the device is turned off. Cabin crew should verify that the device is stowed only for landing.
5.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION** Upon arrival, cabin crew should apply the operator's post-incident procedures. These should include identifying to ground personnel where the item is stowed and providing relevant information about the item. Crew need to complete the required documentation, as per operator procedures, so that the operator is able to comply with mandatory reporting requirements, and can ensure proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

3.4.4 Portable electronic device (PED) fallen into / trapped in a passenger seat – no visible flame or smoke

Amplified procedures for portable electronic device (PED) fallen into / trapped in a passenger seat – no visible flame or smoke	
Step	*Cabin crew action*
	If there are signs of flames or smoke, **APPLY PROCEDURES FOR BATTERY/PED FIRE (SEE 3.4.1)**
1.	**OBTAIN INFORMATION FROM THE PASSENGER** a) ask the passenger to identify the item; b) Ask where the passenger suspects that the item may have dropped or slipped into c) Ask if the seat was moved since misplacing the item. Cabin crew should ask the passenger concerned to identify the item, and where the passenger suspects it may have dropped or slipped into, and if the passenger has moved the seat since misplacing the item.
2.	**RETRIEVE AND USE PROTECTIVE EQUIPMENT** Due to the design of some passenger seats, a PED can slip under a seat covering and / or cushion, behind an armrest or down the side of a seat. Inadvertent crushing of the device poses a fire hazard. Cabin crew should don fire-fighting gloves before trying to retrieve the item.
3.	**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS** Any occurrence concerning a fire hazard in the cabin should be notified immediately to the pilot-in-command who should be kept informed of all actions taken and of the effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each is kept fully informed of the other's actions and intentions.
4.	**RETRIEVE THE ITEM, IF SAFE TO DO SO** **Caution:** Do not move the seat electrically or mechanically when attempting to retrieve the item. To prevent crushing of the PED and reduce the potential fire hazard to the device and the surrounding area, cabin crew and/or the passenger should not use the electrical or mechanical seat functions in an attempt to retrieve the item. Cabin crew should move the passenger and, if applicable, the passenger(s) seated next to the affected seat from the area, to facilitate the search. Cabin crew should not move the seat. If the cabin crew is unable to retrieve the item without moving the seat, it may need to be retrieved by personnel on the ground, after landing at the next destination. If the item cannot be retrieved, cabin crew should move the passenger to another seat, if available. Cabin crew should turn off the individual in-seat power, if possible to do so. Depending on the aircraft type, in-seat power may have to be turned off by the fight crew.

Amplified procedures for portable electronic device (PED) fallen into / trapped in a passenger seat – no visible flame or smoke	
Step	*Cabin crew action*
5.	**MONITOR THE SEAT AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT** Cabin crew should monitor the seat and the surrounding area for the remainder of the flight to verify that the device does not pose further hazard.
6.	**APPLY POST-INCIDENT PROCEDURES, AFTER LANDING AT THE NEXT DESTINATION** Upon arrival, cabin crew should apply the operator's post-incident procedures. These should include identifying to ground personnel where the item is stowed and providing relevant information about the item. Crew need to complete the required documentation, as per operator procedures, so that the operator is able to comply with mandatory reporting requirements, and can ensure proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

3.4.5 Battery / portable electronic device (PED) fire on the flight deck

Amplified procedures for battery / portable electronic device (PED) fire on the flight deck	
Step	*Cabin crew action*
1.	**RECOGNIZE SIGNAL FOR FIRE ON THE FLIGHT DECK** a) Receive call out from the flight deck (such as "back up assistance P-E-D!"); b) Retrieve and use protective equipment, as applicable to the situation; c) Obtain the appropriate fire extinguisher; and d) Enter the flight deck. *Note.— Given the urgency of incidents in the flight deck, close coordination with the flight crew is essential, and following flight crew directives can be vital.* The flight crew's main responsibility during any occurrence is to maintain control of the aircraft. Therefore, removing an item emitting flames or smoke from the flight deck, as soon as possible, is the priority. To do so, flight crew may call upon the cabin crew to assist in the event of flame / smoke on the flight deck. As notifying the cabin crew of the flame / smoke occurrence on the flight deck by interphone may delay the response, the use of the public address (PA) system is considered the preferred method of notification. The flight crew should use phraseology that clearly explains the type of emergency situation to the cabin crew without creating panic amongst the passengers. The first cabin crew member who is ready to act should enter the flight deck.

Amplified procedures for battery / portable electronic device (PED) fire on the flight deck	
Step	*Cabin crew action*
2.	**APPLY FIREFIGHTING PROCEDURE TO EXTINGUISH FLAMES** a) If the item is on fire, in coordination with the flight crew, extinguish the fire. b) Once the fire has been extinguished or the device is not on fire (it may emit visible smoke, or show signs of bulging/overheating), remove it from the flight deck, if possible. c) If the device cannot be moved, pour water (or other non-flammable liquid) on it. The joint action between the flight crew and the cabin crew depends on the location and type of the affected device. The flight crew may have started the appropriate emergency procedures to deal with the fire before the arrival of the cabin crew, including removing the device from any power source. In that case, cabin crew should join the firefighting actions according to the situation. When the decision is taken to fight the fire on the flight deck, in coordination with the flight crew, the cabin crew should use firefighting equipment to extinguish the fire and prevent its spread to additional flammable materials. Halon and halon replacement fire extinguishers are optimal for the extinguishing of flames, but do not provide any cooling properties to the battery. It is critical that once any flames are extinguished that the cabin crew progress to apply Step 4 (Pour water on the device in place). It is important that cabin crew wear protective equipment (such as protective breathing equipment and fire-fighting gloves) when fighting a fire in a confined space, such as the flight deck. **Caution:** In certain firefighting situations (such as to prevent flight crew incapacitation or a loss of control in-flight), crew may assess and deem it necessary to remove the device immediately from the flight deck even if it is still emitting smoke or flames are present. In such case, cabin crew should apply the firefighting procedure in 3.4.1, after the device is removed from the flight deck.
3.	**REMOVE THE DEVICE FROM THE FLIGHT DECK** Once the fire has been extinguished or the device is no longer on fire (even if it is still emitting visible smoke or feels overheated), cabin crew should remove it from the flight deck, if possible. Minimizing the spreading of smoke and fumes in the flight deck is critical for the continued safe operation of the aircraft. If it cannot be moved, cabin crew should use water (or other non-flammable liquid) to cool a battery that has ignited to prevent the spread of heat to other cells in the battery. After the device is removed from the flight deck, the cabin crew should apply the firefighting procedure, as described in 3.4.1, if it is still on fire. Water (or other non-flammable liquid) should be used to cool a battery that has ignited to prevent the spread of heat to other cells in the battery.
4.	**CLOSE THE FLIGHT DECK DOOR** Upon removal of the device, the flight deck door should be maintained closed until the hazard is no longer present. Crew communication and coordination are of utmost importance. The use of the interphone is the primary means of communication unless that system fails.

Amplified procedures for battery / portable electronic device (PED) fire on the flight deck	
Step	*Cabin crew action*
5.	**APPLY PROCEDURES FOR BATTERY / PED FIRE** After the device is removed from the flight deck, apply the BATTERY / PORTABLE ELECTRONIC DEVICE (PED) FIRE procedures (see 3.4.1).
6.	**APPLY POST-INCIDENT PROCEDURES, AFTER LANDING AT THE NEXT DESTINATION** Upon arrival, cabin crew should apply the operator's post-incident procedures. These should include identifying to ground personnel where the item is stowed and providing relevant information about the item. Crew need to complete the required documentation, as per operator procedures, so that the operator is able to comply with mandatory reporting requirements, and can ensure proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

3.4.6 Fire involving dangerous goods

Amplified procedures for fire involving dangerous goods	
Step	*Cabin crew action*
1.	**IDENTIFY THE ITEM** Cabin crew should ask the passenger concerned to identify the item. The passenger may be able to give some guidance on the hazard(s) involved and how these could be dealt with. If the passenger can identify the item, refer to Section 4 of this document for the appropriate emergency response drill. It may not be possible for cabin crew to identify the item right away, especially if the source of the fire is unknown or the item is not readily accessible. In this case, cabin crew should apply firefighting procedures as a first step (Step 2) and then attempt to identify the item (Step 1). If the item is contained in baggage, the crew's actions would be similar to the actions for an item that is visible or readily accessible.
2.	**APPLY FIREFIGHTING PROCEDURE** a) Apply communication procedures. b) Use appropriate firefighting equipment and protective equipment, as required. c) Fight fire. d) Manage passengers and cabin, as required. During any occurrence concerning a fire in the cabin, the cabin crew should notify the pilot-in-command immediately and keep the flight crew informed of all actions taken and of the effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each is kept fully informed of the other's actions and intentions.

Amplified procedures for fire involving dangerous goods	
Step	*Cabin crew action*
	Minimizing the spreading of smoke and fumes into the flight deck is critical for the continued safe operation of the aircraft, therefore it is essential to keep the flight deck door closed until the hazard is no longer present. Crew communication and coordination are of utmost importance. The use of the interphone is the primary means of communication between crew members, unless the interphone system fails. Appropriate firefighting procedures should be used to deal with any fire. Cabin crew should use firefighting equipment to extinguish the fire and prevent its spread to additional flammable materials. Cabin crew should not use water on a spillage or when fumes are present since it may spread the spillage or increase the rate of fuming. Consideration should also be given to the possible presence of electrical components when using water extinguishers. It is important that cabin crew use protective equipment (such as protective breathing equipment and fire-fighting gloves/oven gloves), as required, when fighting a fire. If fire develops, cabin crew should take prompt action to move passengers away from the area involved and, if necessary, provide wet towels or cloths and give instructions for passengers to breathe through them. **Caution:** In certain firefighting situations, cabin crew may assess and deem it necessary to slightly open baggage to allow entry of the extinguishing agent and non-flammable liquid. In order to avoid injury from a flash fire, cabin crew should use caution when opening the affected baggage when there is any indication of smoke or flames. This should only be done after donning appropriate protective equipment.
3.	**MONITOR FOR ANY INDICATION OF REIGNITION** If smoke or flames reappear, cabin crew should repeat Step 2.
4.	**APPLY PROCEDURES FOR SPILLAGE OR LEAKAGE OF DANGEROUS GOODS, IF REQUIRED, ONCE THE FIRE HAS BEEN EXTINGUISHED** In the event of a fire involving dangerous goods, cabin crew may need to apply the SPILLAGE OR LEAKAGE INVOLVING DANGEROUS GOODS procedures (see 3.4.7) once the fire has been extinguished.
5.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION** Upon arrival, cabin crew should apply the operator’s post-incident procedures. These may include identifying to ground personnel where the item is stowed and providing all information about the item. Crew should complete the required documentation, as per operator procedures, so that the operator is notified of the event, proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

3.4.7 Spillage or leakage of dangerous goods

Amplified procedures for spillage or leakage of dangerous goods	
Step	*Cabin crew action*
1.	**NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS** During any occurrence concerning dangerous goods, the cabin crew should notify the pilot-in-command immediately and keep the flight crew informed of all actions taken and of the effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each is kept fully informed of the other's actions and intentions. Minimizing the spreading of smoke and fumes into the flight deck is critical for the continued safe operation of the aircraft, therefore it is essential to keep the flight deck door closed at all times until the hazard is no longer present. Crew communication and coordination are of utmost importance. The use of the interphone is the primary means of communication between crew members, unless the interphone system fails.
2.	**IDENTIFY THE ITEM** Cabin crew should ask the passenger concerned to identify the item. The passenger may be able to give some guidance on the hazard(s) involved and how these could be dealt with. If the passenger can identify the item, refer to Section 4 of this document for the appropriate emergency response drill.
3.	**COLLECT EMERGENCY RESPONSE KIT OR OTHER USEFUL ITEMS** Cabin crew should collect emergency response kit, if provided, or collect for use in dealing with the spillage or leakage: a) A supply of paper towels or newspapers or other absorbent paper or absorbent fabric (e.g. seat cushion covers, head rest protectors). b) Rubber gloves or fire-resistant gloves/oven gloves covered by polyethylene bags. c) At least two large polyethylene waste bin bags. d) At least three smaller polyethylene bags, such as those used for duty-free or bar sales or, if none available, airsickness bags.
4.	**RETRIEVE AND USE PROTECTIVE EQUIPMENT** It is important that cabin crew use protective equipment (such as protective breathing equipment, rubber gloves or fire-resistant gloves/oven gloves covered by polyethylene bags) when handling a spillage or leakage of dangerous goods. Cabin crew should always protect their hands before touching suspicious packages or items.

Amplified procedures for spillage or leakage of dangerous goods	
Step	*Cabin crew action*
5.	**MOVE PASSENGERS AWAY FROM AREA AND DISTRIBUTE WET TOWELS OR CLOTHS** The use of therapeutic oxygen bottles or the passenger drop-out oxygen system to assist passengers in a smoke- or fume-filled passenger cabin should not be considered since considerable quantities of fumes or smoke would be inhaled through the valves or holes in the masks. A more effective aid to passengers in a smoke- or fume-filled environment would be the use of a wet towel or cloth held over the mouth and nose. A wet towel or cloth aids in filtering and is more effective at doing this than a dry towel or cloth. Cabin crew should take prompt action if smoke or fumes develop and move passengers away from the area involved and, if possible, provide wet towels or cloths and give instructions to breathe through them.
6.	**PLACE DANGEROUS GOODS ITEM IN POLYETHYLENE BAGS** In the case of a spill of known or suspected dangerous goods in powder form, cabin crew should: a) Leave everything undisturbed. b) Do not use fire agent or water. c) Cover area with polyethylene or other plastic bags and blankets. d) Keep area isolated until after landing. **With emergency response kit** If it is certain that the item will not create a problem, the decision may be made not to move it. In most circumstances, however, it will be better to move the item, and this should be done as suggested below. Cabin crew should place the item in a polyethylene bag as follows: a) Prepare two bags by rolling up the sides and placing them on the floor. b) Place the item inside the first bag with the closure of the item, or the point from which it is leaking from its container, at the top. c) Take off the rubber gloves while avoiding skin contact with any contamination on them. d) Place the rubber gloves in the second bag. e) Close the first bag while squeezing out the excess air. f) Twist the open end of the first bag and use a bag tie to tie it sufficiently tight to be secure but not so tight that pressure equalization cannot take place. g) Place the first bag (containing the item) in the second bag, which already contains the rubber gloves and secure the open end in the same manner as that used for the first bag.

Amplified procedures for spillage or leakage of dangerous goods	
Step	*Cabin crew action*
	With no emergency response kit Cabin crew should pick up the item and place it in a polyethylene bag. They should ensure the receptacle containing the dangerous goods is kept upright or the area of leakage is at the top. Using paper towels, newspaper, etc., cabin crew should mop up the spillage, after having ascertained there will be no reaction between what is to be used to mop up and the dangerous goods. They should place the soiled towels, etc., in another polyethylene bag. Cabin crew should place the rubber gloves and bags used to protect the hands either in a separate small polyethylene bag or with the soiled towels. If extra bags are not available, cabin crew should place the towels, rubber gloves, etc., in the same bag as the item. They should expel excess air from the bags and close tightly so as to be secure but not so tight that pressure equalization cannot take place.
7.	**STOW POLYETHYLENE BAGS** If there is a catering or bar box on board, cabin crew should empty any contents and place the box on the floor, with the door upward. They should place the bag(s) containing the item and any soiled towels, etc., in the box and close the door. Cabin crew should take the box or, if there is no box, the bag(s) to a position as far away as possible from the flight deck and passengers. If a galley or lavatory is fitted, cabin crew should consider taking the box or bag(s) there, unless it is close to the flight deck. Cabin crew should use a rear galley or lavatory wherever possible but should not place the box or bag(s) against the pressure bulkhead or fuselage wall. If a galley is used, the box or bag(s) can be stowed in an empty waste bin container. If a lavatory is used, the box can be placed on the floor or the bag(s) stowed in an empty waste container. The lavatory door should be locked from the outside. In a pressurized aircraft, if a toilet is used, any fumes will be vented away from passengers. However, if the aircraft is unpressurized there may not be positive pressure in a toilet to prevent fumes from entering the passenger cabin. Cabin crew should ensure when moving a box that the opening is kept upward or when moving a bag that either the receptacle containing the dangerous goods is kept upright or the area of leakage is kept at the top. Wherever the box or bag(s) have been located, cabin crew should wedge them firmly in place to prevent them from moving and to keep the item upright. They should ensure that the position of the box or bags will not impede disembarkation from the aircraft.
8.	**TREAT AFFECTED SEAT CUSHIONS / COVERS IN THE SAME MANNER AS DANGEROUS GOODS ITEM** Cabin crew should remove seat cushions, seat backs or other furnishings which have been contaminated by a spillage from their fixtures and place them in a large bin bag or other polyethylene bag, together with any bags used initially to cover them. Cabin crew should stow them away in the same manner as the dangerous goods item causing the incident.

Amplified procedures for spillage or leakage of dangerous goods	
Step	*Cabin crew action*
9.	**COVER SPILLAGE ON CARPET / FLOOR** Cabin crew should cover any spillage on the carpet or furnishings with a waste bag or other polyethylene bags, if available. If not, cabin crew should use airsickness bags opened out so that the plastic side covers the spillage or use the plastic covered emergency information cards. If possible, cabin crew should roll up carpet which has been contaminated by a spillage and which is still causing fumes despite being covered and place it in a large bin bag or other polyethylene bag. Cabin crew should place it in a waste bin and stow it, when possible, either in the rear lavatory or rear galley. If the carpet cannot be removed it should remain covered by a large bin bag or polyethylene bags, etc., and additional bags should be used to reduce the fumes.
10.	**MONITOR ITEMS STOWED AWAY / CONTAMINATED FURNISHINGS** Cabin crew should monitor any dangerous goods, contaminated furnishings or equipment which have been removed and stowed away or covered.
11.	**APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION** Upon arrival, cabin crew should apply the operator's post-incident procedures. These may include identifying to ground personnel where the item is stowed and providing all information about the item. Crew should complete the required documentation, as per operator procedures, so that the operator is notified of the event, proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

— END —