

NOTICE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

N 8900.430

National Policy

Effective Date:
12/5/17

Cancellation Date:
12/5/18

SUBJ: Procedures for Fighting In-Flight Fires Associated With Portable Electronic Devices and Lithium Batteries When Using Commercially Marketed Containment Products

1. Purpose of This Notice. This notice provides guidance to Flight Standards District Office (FSDO) and certificate management office (CMO) aviation safety inspectors (ASI) on air carrier procedures that include the use of fire containment products.

2. Audience. The primary audience for this notice is FSDO and CMO ASIs responsible for reviewing the contents of approved training programs and curricula and testing for compliance with Title 14 of the Code of Federal Regulations (14 CFR) part 121, § 121.417; part 125, § 125.289; and part 135, § 135.331. The secondary audience includes all Flight Standards divisions, branches, and offices.

3. Where You Can Find This Notice. You can find this notice on the MyFAA employee website at https://employees.faa.gov/tools_resources/orders_notices. Inspectors can access this notice through the Flight Standards Information Management System (FSIMS) at <http://fsims.avs.faa.gov>. Operators can find this notice on the Federal Aviation Administration's (FAA) website at <http://fsims.faa.gov>. This notice is available to the public at http://www.faa.gov/regulations_policies/orders_notices.

4. Background. A number of manufacturers are marketing fire containment kits/bags that may consist of a containment bag, sleeve, or containment box, with or without additional tools such as fire gloves, a pry bar, and face protection/shield. Manufacturers may have stated in their advertisement and marketing videos that their products are "FAA certified" or "successfully tested by the FAA," or that their product "meets FAA standards." However, the Fire Safety Branch (ANG-E21) of the FAA William J. Hughes Technical Center and the Aircraft Certification Service (AIR) emphasize that there are no FAA test standards for these containment products, nor is there a mechanism in place for the approval of these products.

a. In the past 2 years, at least four air carriers have installed these fire containment kits/bags on their airplanes. Several other air carriers are also investigating the effectiveness of small portable electronic device (PED) containment products. These efforts have prompted inquiries from CMOs and FSDOs concerning the use of these various containment products.

b. With the advent of these commercially marketed containment products, operators may have amended, or are considering amending, their firefighting procedures and training programs to align with procedures suggested by the manufacturers of these containment products. The FAA, through continuous research and evaluation by ANG-E21 and the Transport Airplane Directorate (TAD), believes the procedures as set forth in the current edition of Advisory Circular (AC) 120-80, In-Flight Fires, provide the best means to address fires or overheating caused by lithium batteries. These AC procedures are reflected in the current editions of:

- International Civil Aviation Organization (ICAO) Doc 9481 AN/928, Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods (refer to the Examples of Dangerous Goods Incidents Checklists); and
- The International Air Transport Association's (IATA) Cabin Operations Safety Best Practices Guide, Appendix A, Cabin Crew Checklist for Fires Involving Batteries and Portable Electronic Devices (PED).

Note: The risks and safety concerns of lithium ion batteries in aircraft are well documented. A listing of known lithium battery incidents occurring in air travel is maintained by the FAA and can be found at https://www.faa.gov/about/office_org/headquarters_offices/ash/ash_programs/hazmat/aircarrier_info/media/Battery_incident_chart.pdf.

5. Discussion.

a. Containment Products Used for Fire Extinguishing. The FAA has no objection to the use of the various commercially manufactured containment products, provided the procedures recommended in FAA guidance are followed. Researchers from ANG-E21 and aerospace engineers from TAD were presented with a series of questions on the use of fire containment products and concluded that containment devices should not be used in an attempt to extinguish a PED fire due to the dangers associated with picking up the PED while the device is in an unstable condition (i.e., the fire is still actively burning or the device appears to be expanding or popping from heat). A fire in one cell of a battery may not have propagated to other cells. However, if the device is hot, the potential for propagation exists; therefore, the device should not be moved until thoroughly cooled.

(1) ANG-E21, IATA, ICAO, and Flight Safety Foundation (FSF) guidance materials also stress that a malfunctioning PED should not be handled by personnel. Guidance for operators to consider when incorporating containment kits includes the current editions of:

- Safety Alert for Operators (SAFO) 09013, Fighting Fires Caused by Lithium Type Batteries in Portable Electronic Devices, and supplement.
- AC 20-42, Hand Fire Extinguishers for Use in Aircraft.
- AC 120-80, In-Flight Fires.
- IATA Cabin Operations Safety Best Practices Guide, Appendix A, Cabin Crew Checklist for Fires Involving Batteries and Portable Electronic Devices (PED).
- IATA Lithium Batteries Risk Mitigation Guidance for Operators.
- IATA Lithium Battery Toolkit, available at <http://www.iata.org/whatwedo/cargo/dgr/Pages/lithium-batteries.aspx>.

- FSF Lithium Battery Overheating Flight Crew Guidance, available at <https://flightsafety.org/flight-safety-foundation-publishes-flight-crew-guidance-lithium-battery-overheating/>.
- ICAO Doc 9284, Technical Instructions for the Safe Transport of Dangerous Goods by Air, available at <http://www.icao.int/Pages/default.aspx>.
- ICAO Doc 9481 AN/928, Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods (refer to the Examples of Dangerous Goods Incidents Checklists).
- Lithium Batteries Guidance for Crew Members, available at <https://www.youtube.com/watch?v=Ayib3f6rqPs> (starting at 11:10).

(2) Once the fire is extinguished, containment devices can be used to secure the PED utilizing the procedures that are specified in SAFO 09013, AC 20-42, and AC 120-80, provided the PED has been adequately cooled to allow transfer to the containment device. Keeping an unstable device cool is critical. In order to do so, any such containment device should be capable of holding liquid so that the device can be submerged during storage. (Refer to the IATA Cabin Operations Safety Best Practices Guide, Appendix A, Cabin Crew Checklist for Fires Involving Batteries and Portable Electronic Devices (PED).)

b. PEDs and Fires. Crewmembers should exercise extreme caution when approaching an electronic device that is overheated, smoking, or deforming, or is on fire, indicating that thermal runaway has already occurred. Principal operations inspectors (POI)/cabin safety inspectors (CSI) should validate emergency firefighting procedures and training drills that are consistent with FAA, IATA, FSF, and ICAO recommendations for lithium battery firefighting techniques.

c. Crewmember Training/Testing (§§ 121.417, 125.289, and 135.331). Crewmember emergency training drills should reinforce and evaluate the importance of crewmember actions in the event of heat/smoke/fire involving lithium batteries that are consistent with firefighting training, as required by §§ 121.417(b), 125.289(e), and 135.331(b), as well as emergency response procedures required by Title 49 of the Code of Federal Regulations (49 CFR) part 172, § 172.704 (if required).

6. Action. POI/CSIs should evaluate operator procedures, training curricula, and testing to ensure certificate holders are using proper firefighting techniques for PED/lithium battery fires with containment procedures.

a. Confirm Procedures. Confirm these recommended procedures are in place:

(1) Extinguish the fire with a halon or water hand-held extinguisher, or nonflammable liquid.

(2) Cool a smoking/overheating device with water from any available source, a nonalcoholic beverage, or an aqueous extinguisher. (For more information, refer to AC 20-42D, chapter 4, subparagraph 1f, Lithium Battery Fires.) The most effective cooling is achieved by ensuring the liquid gets inside the device. This may require discharging liquid into any openings within the unit or openings that may be formed as a result of the PED failure.

(3) Continue to cool the device and let the device rest without touching for at least 15 minutes.

(4) Don personal protective equipment (PPE), if available.

(5) Place the device in a container/containment product (e.g., trash bin, galley compartment bin, bag, sleeve, box, or other suitable container that is capable of containing and maintaining a device submerged in water).

(6) Fill the container/containment device with water or nonalcoholic liquid to completely submerge the device.

(7) Place in a secured area that is accessible to the cabin crew yet removed from passengers.

(8) Check frequently and provide status update to the pilot in command (PIC).

b. Collect Data. Complete the data collection within 90 days of the effective date of this notice.

7. Recording Data.

a. Program Tracking and Reporting Subsystem (PTRS) for Part 125 Certificated Operators, Including Part 125 Letter of Deviation Authority (LODA) Holders/Operators. This notice requires principal inspectors (PI) assigned to part 125 operator training to ensure they are aware of ICAO Doc 9481 AN/928 and AC guidance describing the hazards of lithium battery containment. PIs are to accomplish the following actions:

(1) Document Distribution. PIs will provide a copy of this notice to their part 125 operator within the next 90 days and provide the part 125 operator with copies of ICAO Doc 9481 AN/928, pages 12 through 28; SAFO 09013; AC 20-42; AC 120-80; and Information for Operators (InFO) 17012, Risk Associated with the Use of Fire Containment Products by Title 14 of the Code of Federal Regulations (14 CFR) Part 91 Subpart K (91K), 121, 125, and 135 Operators.

(2) Record-Making Process. When the PI completes this action, record it as follows:

(a) Record the results of the visit and record within the “National Use” block of the PTRS using code: N8900430. This will enable further evaluation and risk analysis of firefighting and containment procedures.

(b) Use PTRS code 1380/5390/3390.

(c) The PI will note that the documents have been provided in the “Comments” section.

b. Custom Data Collection Tools (C DCT) for Part 121 and 135 Certificate Holders.

Use the Safety Assurance System (SAS) National/Regional C DCTs for the required Design Assessment (DA) and complete within 90 days of the effective date of this notice. The National/Regional C DCTs are titled:

- Part 121 – Inflight Fire Fighting of PED Using Fire Containment Procedures DA.
- Part 135 – Inflight Fire Fighting of PED Using Fire Containment Procedures DA.

(1) POIs will load the applicable National/Regional C DCT template using the following steps:

- (a) From the SAS fly-out menu, under “Create DCTs,” select “Custom DCT.”
- (b) Select “CH/A Name/Designator” from the drop-down menu.
- (c) The Custom DCT Name should be left blank. It will autopopulate with the template title.
- (d) Enter “N8900430” without quotes in the Local/Regional/National field.
- (e) Select the checkbox for “LRN Locked.”
- (f) Under “Requires Own Assessment,” select “Yes” from the drop-down menu.
- (g) Select the “OP” radio button next to “Specialty.”
- (h) Select the “Design” radio button next to “Question Type.”
- (i) Click on the “Search/Add Question(s)” button to open the pop-up window.
- (j) Select the “Yes – National/Regional” radio button from the “Apply from Template” menu.
- (k) Click on the “Select Template” drop-down menu and select the applicable DA template.
- (l) Click on “Search.”
- (m) Click on “Add Question(s).”
- (n) Click on the “Close” button to return to the “Create DCTs” window.

Note: The “Remove Questions” button is active in the “Create DCTs” window. Do not remove questions.

- (o) Click on “Send to Planning.”
- (p) Verify that the C DCT appears in the Comprehensive Assessment Plan (CAP).

Note: These instructions are also found in the Adding a Custom DCT Quick Reference Card (Q-Card) located in the SAS Resource Guide.

(2) Once loaded, POIs (or assigned ASIs) will document the assessments by answering the questions in the National/Regional C DCT. After the National/Regional C DCTs are completed, the Air Transportation Division (AFS-200) may query the data in SAS to monitor the implementation of the new requirements.

8. Disposition. We will incorporate the information in this notice into FAA Order 8900.1 before this notice expires. Direct questions concerning the information in this notice to AFS-200 at 202-267-8166. Direct questions concerning hazardous materials (hazmat) to the Office of Hazardous Materials Safety (ADG) at 202-267-9432.



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