

High Energy Fire and Cabin Safety Risk Management

Presented to: International Aircraft Systems Fire
Protection Working Group Meeting

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AFS-220 Air Carrier Operations Branch



**Federal Aviation
Administration**

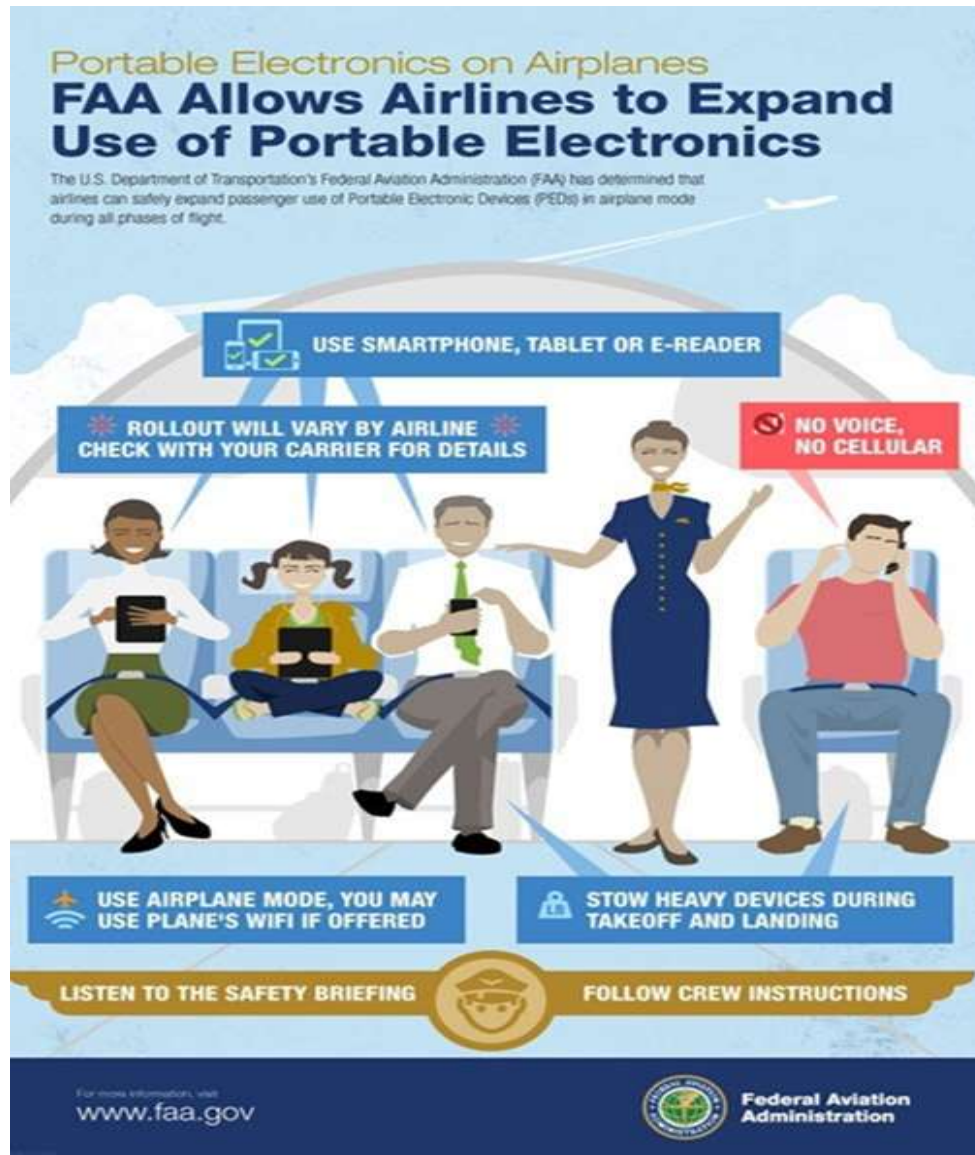


InFO
13010SUP

**Crewmember
Training
Program
Checklist**

Note:
Describe how
to manage
scenarios
such as....

**PED unit or
battery
smoke or fire
and other
scenarios.**

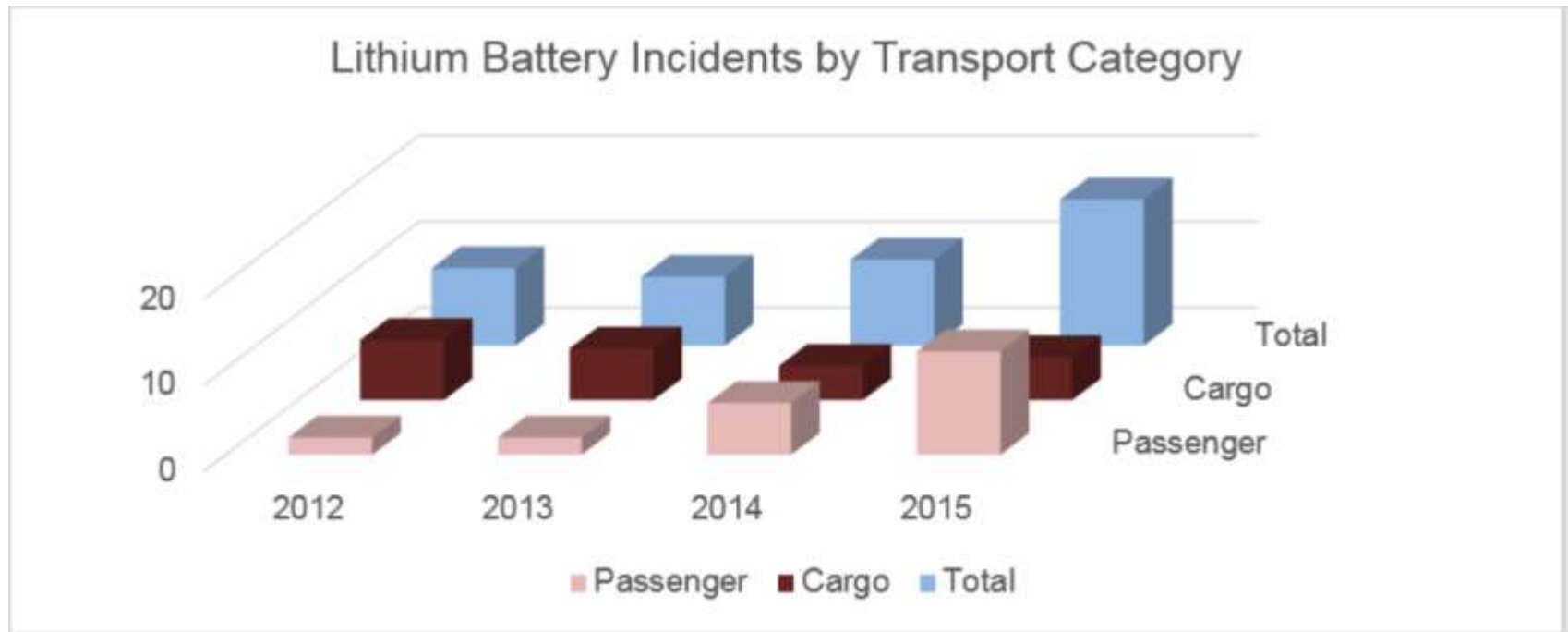


**Federal Aviation
Administration**

Emerging risk to airline operations



ADG Significant Safety Initiative



Air Carrier Training Aviation Rulemaking Committee(ACTARC)

- **Charter established (1/21/2014)**
- **Objectives and Tasks**
 - Develop and recommend to the FAA new or updated guidance materials, notices, handbook guidance and other related materials for air carrier training and qualification.
 - Make recommendations, including necessary rulemaking and additional tasking to the Administrator through the Associate Administrator for Aviation Safety.



Air Carrier Training ARC

- **Objectives and Tasks (continued)**
 - Discuss global air carrier training issues and develop strategies for international harmonization
 - Provide documentation and technical information to support recommendations.
 - Form and provide committee oversight of specialized work groups to research, document and make recommendations on specific, assigned topics.



ACT ARC Steering Committee

- **Initiative #30**
- **Assess the need for comprehensive revisions and reorganization of flight attendant qualification and training requirements and standards.**



2017 HEFTE Meeting Schedule

- **August 9-10 F2F Meeting hosted by ALPA in Herndon, VA**
 - Reviewed terms of reference
 - Nomination of HEFTE Workgroup Membership
 - AFA/ALPA Workgroup Co-Lead
 - Delta Workgroup Co-Lead
 - FAA Subject Matter Experts
 - Industry Subject Matter Experts



2017 HEFTE Meeting Schedule

- **November 7-8 hosted by American Airlines at DFW**
 - Establish High Energy Fire Training Enhancement (HEFTE) WG
 - Refine scope of work plan language



2017 HEFTE Meeting Schedule

- **November 7-8 hosted by American Airlines at DFW (continued)**
 - Develop work plan
 - Workplan considerations
 - Review of current guidance
 - Review of scheduled draft guidance
 - Aircraft and equipment specific considerations
 - Review post event response



Air Carrier and Crewmember Guidance

- **Specific Regulatory Requirements (SRR)**
 - 14 CFR 121.306 (c) Portable electronic devices (PED)
 - 14 CFR 121.401: Training
 - 14 CFR 121.417(b)(2)(iii) Crewmember emergency training
 - 14 CFR 121.417(3) and (4) fire inflight or on the surface, review and discussion of previous accidents and incidents pertaining to actual emergencies.
 - 14 CFR 121.417 (2)(i)(B) Emergency drill requirements with each type of installed fire extinguisher.
 - 14 CFR 121.417(d) PBE drill and firefighting drill



Air Carrier and Crewmember Guidance

- **SRR**

- 49 CFR 172.101 Hazardous Materials Table
- 49 CFR 175.10 Exceptions for passengers, crewmembers and air operators
- 49 CFR 175.31 requires notification to FAA of HAZMAT discrepancies in air cargo or baggage.



Air Carrier and Crewmember Guidance

- **AC 120-80A Inflight Fires issued 12/22/2014**
 - REVISED in response to NTSB Safety Recommendations A-11-87 through A-11-91
 - UPS flight 006 accident on September 3, 2010
 - Discusses the importance of flight crewmember hands on training, aircraft specific training
 - Flight crew stowing oxygen masks set to 100%
 - Guidance for **smoke , fire, fumes** checklist to include as the first step, don oxygen masks and verify regulator set to 100%



Air Carrier and Crewmember Guidance

- **AC 120-80A Inflight Fires issued 12/22/2014**
 - Provides guidance for operators to address through procedures and **training on the unique characteristics of lithium battery fires.**
 - Discusses the danger of hidden inflight fires that may not be visible or easily accessed by flight or cabin crew.
 - It stresses the importance of aggressively taking action – the role of the pilot flying / pilot not flying/ the cabin firefighter, the communicator, the runner.
 - single flight attendant operations.



Air Carrier and Crewmember Guidance

- **AC 20-42D Hand Fire Extinguishers for use in Aircraft**



Air Carrier and Crewmember Guidance

- **SAFO 09013 Fighting Fires Caused by Lithium Type Batteries in Portable Electronic Devices**
 - SAFO 09013 Supplement Lithium Batteries
- **SAFO 09018 Passenger/Crew DC Power Outlet installations**
- **SAFO 15003 Fire Risk of Electronic Cigarettes (e-cigarettes) in Checked Baggage**
- **SAFO 15010 Carriage of Spare Lithium Batteries in Carry on and Checked Baggage**
- **SAFO 16011 Air Transport Restrictions for Recalled Lithium Batteries and Lithium Battery Powered Devices**



Air Carrier and Crewmember Guidance

- **InFO 09010 Availability of a FAA in-flight Firefighting Training Video**



LAPTOP FIRE TEST233.mpg

- **InFO 07016 PHMSA Guidance on the Carriage of Batteries and Battery Powered Devices**
- **InFO 11002 Smoke/Fumes in the Cabin /Cockpit of Transport Category Aircraft**



Air Carrier and Crewmember Guidance

- **InFO 09014 Portable electronic devices (Credit Card Readers)**
- **InFO 13010 Expanding Use of Passenger Portable Electronic Devices**
- **InFO 13010 Supplement, FAA Aid to Operators for the Expanded Use of Passenger PEDs**



Additional FAA Guidance

- Battery and hazmat guidance documents and poster files available at:
- <http://FAA.gov/Go/HazmatSafety>
- Under “Air Carrier Information”

A poster titled "Batteries Allowed in Airline Passenger Baggage in the US" from the Federal Aviation Administration. It contains a table that categorizes different types of batteries and specifies whether they are allowed in carry-on or checked baggage, and if they are allowed in checked baggage, whether they must be in original packaging.

Type of Battery	Allowed in carry-on baggage?	Allowed in checked baggage?	Notes
Rechargeable batteries	YES	YES	YES
Non-rechargeable batteries	YES	YES	YES
Disposable batteries	YES	YES	YES
Large lithium-ion batteries (over 100 Wh)	YES	YES	YES
Large lithium-ion batteries (over 100 Wh)	YES	YES	YES
Large lithium-ion batteries (over 100 Wh)	YES	YES	YES
Large lithium-ion batteries (over 100 Wh)	YES	YES	YES



Safety Risks: Spontaneous ignition or thermal runaway (TR) with lithium battery powered PEDs.



Fresh Air Buddy
PERSONAL AIR PURIFIER

Close Info Window

Specifications:

- Size:** 2.5" x 1.5" x 0.85"
- Weight:** 1.5 ounces
- Battery Life:** 50 hr (approx)
- Battery:** Lithium CR123A (1) included
- Attachments:** Neck Cord
- Ion Density:** 1.5 million ions / cc
- Ozone Output:** .028 ppm, UL, FUJI, USC
- Color:** Black
- Solid Platinum Emitter**
- Electroplated Gold Grid**

United States Item#: US40166
Canada Item#: CA40166

Fresh Air Buddy Universal Fast Charger & 2 lithium ion rechargeable batteries.
United States Item#: US40167
Canada Item#: CA40167

[Download Owners Manual](#)



JetBlue LGB battery explosion.avi



Fire Safety Branch

- **Test were conducted to characterize the flammability hazard of lithium batteries that are used in**
 - Laptop computers (test date:2008)
 - Tablets (test date: 8/2016)
- **Purpose: Evaluate the effectiveness of the guidance in SAFO 09013 Fighting Fires Caused by Lithium Type Batteries in Portable Electronic Devices**
- <https://www.youtube.com/watch?v=Sh3ZOvhRNwU>



Test Summary – General Observations

Philosophy of SAFO 09013 still holds:

Two phase procedure:

- 1. Extinguishment of any fire/flames**
- 2. Cool the device to prevent propagation/TR**

Note: Halon 1211, water or non flammable liquid, water fire extinguisher are effective to prevent the spread to additional flammable materials.



Fire containment procedures/products



No FAA test standards for Containment Products

- **WARNING: Do not use** fire resistant burn bags to isolate burning lithium-type batteries.
- Transferring a burning appliance into a burn bag may be extremely hazardous.
- **Do not move** the device until you are certain the fire is extinguished and the device is cool.
- <https://youtu.be/pOiwEW54xL8?t=370>



Currently in draft...

Notice to Inspectors

SUBJ Procedures for Fighting In-Flight Fires Associated with Portable Electronic Devices and Lithium Batteries when using Commercially Marketed Containment Products

InFO

Subject: 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

Purpose: This InFO serves to clarify Federal Aviation Administration (FAA) policy on the use of fire containment products such as fire containment kits/bags and acceptable firefighting and containment procedures for inflight fires involving portable electronic devices (PED).



FAA SRM TEAM Participation

•SRM supported by SMEs from multiple offices across the FAA including:

Office of Security and Hazardous Materials

Office of Aviation Safety

Office of Airports

Office of NextGen



Flight Deck / Cabin coordination



Scheduled updates

- **AC 120-80 Inflight Fires**
 - Additional guidance for flight deck firefighting
 - recommend combined (pilot/FA) scenario based training
- **SAFO**
- **InFO**
- **Custom Data Collection Tools (DCTs)**



- **Thank you**

