High Energy Fire and Cabin Safety Risk Management

Presented to: International Aircraft Systems Fire Protection Working Group Meeting

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Note:
Describe how to manage scenarios such as:
PED unit or battery smoke or fire and other scenarios.
Emerging risk to airline operations
ADG Significant Safety Initiative

Lithium Battery Incidents by Transport Category

- Passenger
- Cargo
- Total

2012: 0
2013: 1
2014: 2
2015: 3

Total:
- Cargo: 0
- Passenger: 0
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    - Review of scheduled draft guidance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 in flight 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

• 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”
Safety Risks: Spontaneous ignition or thermal runaway (TR) with lithium battery powered PEDs.
• 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=Sh3ZOvhRNgU](https://www.youtube.com/watch?v=Sh3ZOvhRNgU)
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](https://youtu.be/pOiwEW54xL8?t=370)
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