FAA Portable Electronic Device (PED) Fire Training Videos

Presented to: The Tenth Triennial International Fire & Cabin Safety Research Conference

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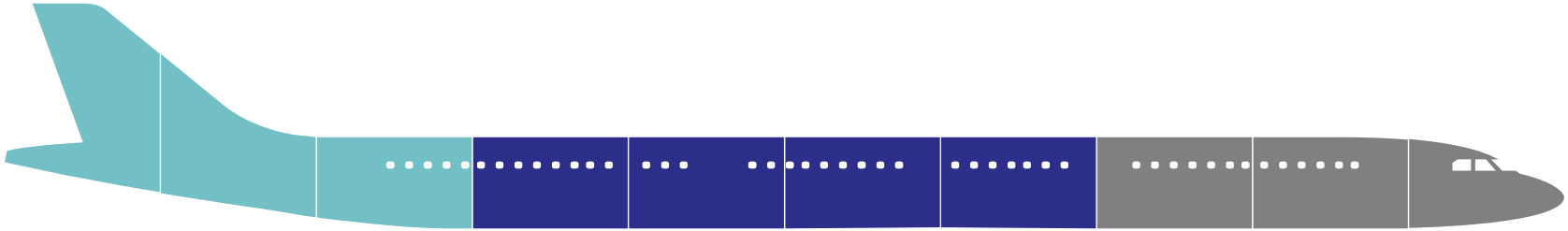
Federal Aviation Administration

FAA Videos: Portable Electronic Device (PED) Fire Training



Background → **PED Fire Training Videos** → **Questions???**

(Cabin and Flight Deck)

- **General Overview**
- **Content Overview**
- **Highlights**

Background

- **FAA published Safety Alert For Operators (SAFO) 09013 and 09013SUP, *Fighting Fires Caused By Lithium Type Batteries in Portable Electronic Devices* (June 23, 2009).**
- **FAA published Advisory Circular (AC) 120-80A, *In-flight Fires* (December 22, 2014) to attempt to address lithium battery fire concerns.**
- **Since the 2014 issuance of AC 120-80A, the industry has gained significant additional knowledge surrounding the concerns with High-Energy Fires (HEF) as technologies continue to evolve.**

Background

- The U.S. FAA Air Carrier Training Aviation Rulemaking Committee (ACT ARC) was created in 2014.
- Under the FAA ACT ARC, the High-Energy Fire Training Enhancement Workgroup (HEFTE WG) was formed to recommend updates and/or improvements to current training and guidance associated with the response to High-Energy Fires that can occur in the occupied areas of an aircraft.
- In 2018, Recommendation 18-5 from the HEFTE WG was adopted by the FAA ACT ARC.
- Draft AC 120-80B is out for public comment now and closes 10/24/2022

Background

The videos were developed in collaboration with:

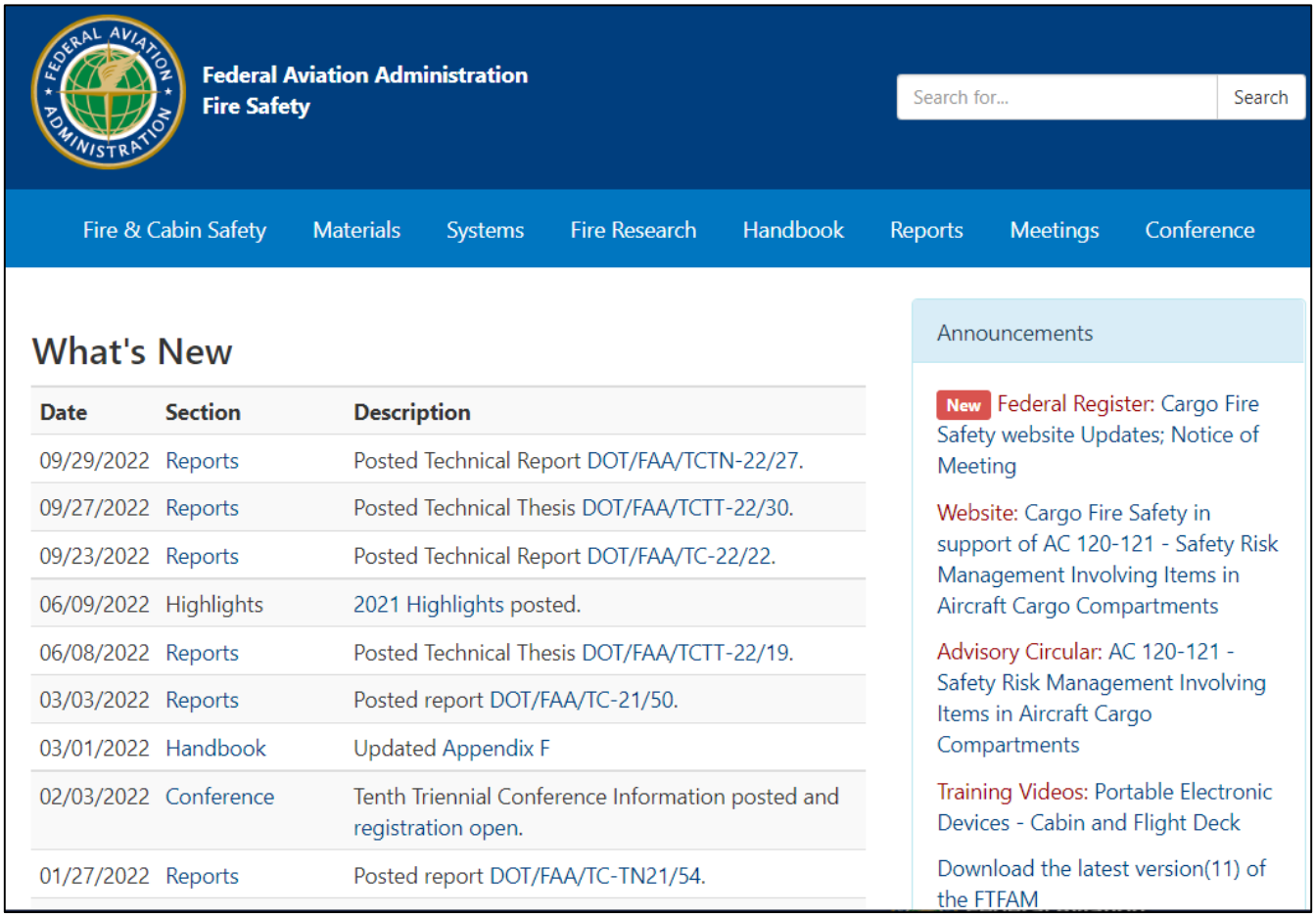
- Air Line Pilots Association (ALPA)
- Association of Flight Attendants (AFA)
- Alaska Airlines
- The Boeing Company
- European Union Aviation Safety Agency (EASA)
- FAA:
  - Aircraft Certification
  - Flight Standards
  - Fire Safety
  - Hazardous Materials Safety

FAA PED Fire Training Videos

- **FAA PED Fire Training Video – Cabin**
  - Focus is related to awareness and reinforcement of guidance on fighting lithium battery PED fires in the cabin of an aircraft

- **FAA PED Fire Training Video – Flight Deck**
  - Focus is related to awareness and reinforcement of guidance on dealing with lithium battery PED fires in the flight deck of an aircraft

- **Videos provide reinforcement of guidance to Operator staff on developing training and procedures for crewmembers fighting High-Energy Fires in the cabin or flight deck**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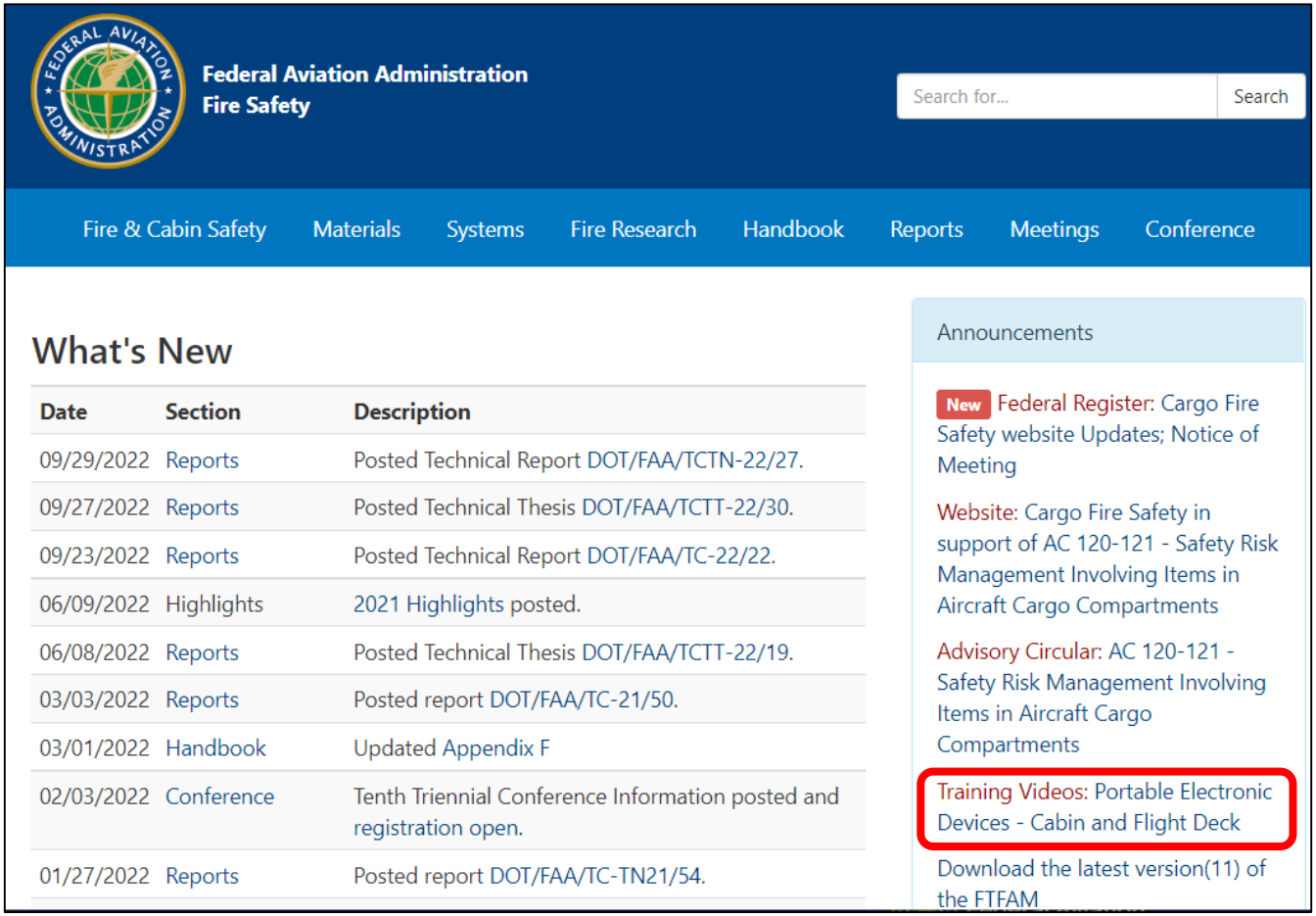
Announcements
New Federal Register: Cargo Fire Safety website Updates; Notice of Meeting
Website: Cargo Fire Safety in support of AC 120-121 - Safety Risk Management Involving Items in Aircraft Cargo Compartments
Advisory Circular: AC 120-121 - Safety Risk Management Involving Items in Aircraft Cargo Compartments
Training Videos: Portable Electronic Devices - Cabin and Flight Deck
Download the latest version(11) of the FTFAM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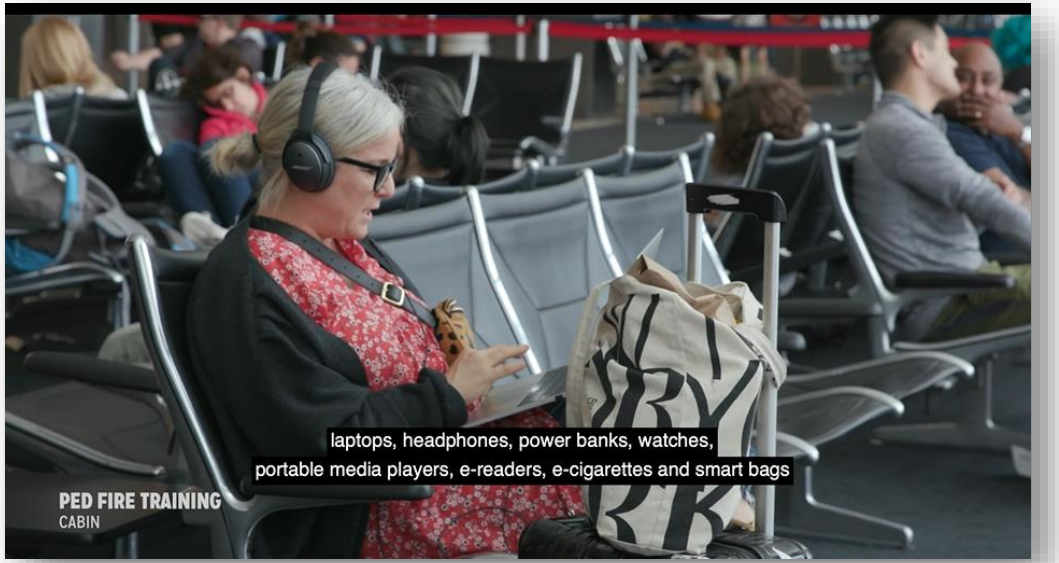
Video Content Overview

- Examples of Portable Electronic Devices (PEDs)
- Concerns and Thermal Runaway Explained
- Propagation Explained
- Relationship Between Battery Sizes and Reaction Intensity
- First signs of Thermal Runaway
- Lithium Battery Fire Fighting Principles
- Hazards Specific to the Cabin and Flight Deck
- Cooling and Containment
- Closing Summary of the Concerns Specific to the Cabin and Flight Deck of an aircraft

Examples of Portable Electronic Devices (PEDs) (Cabin/Flight Deck Videos)

Both videos start out by providing a comprehensive list and visual examples of devices containing lithium batteries.



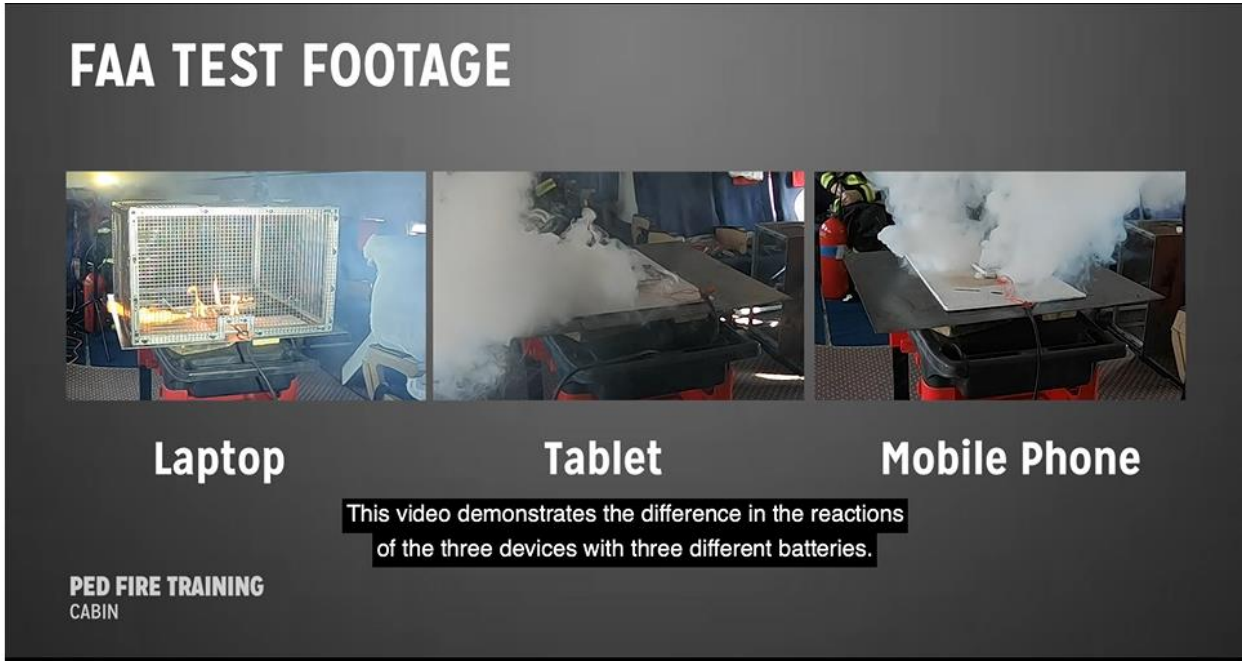
Concerns and Thermal Runaway Explained (Cabin/Flight Deck Videos)

- **Explains/defines thermal runaway.**
- **Awareness of hazards, such as smoke, flammable or toxic gases, flames, explosion, etc.**

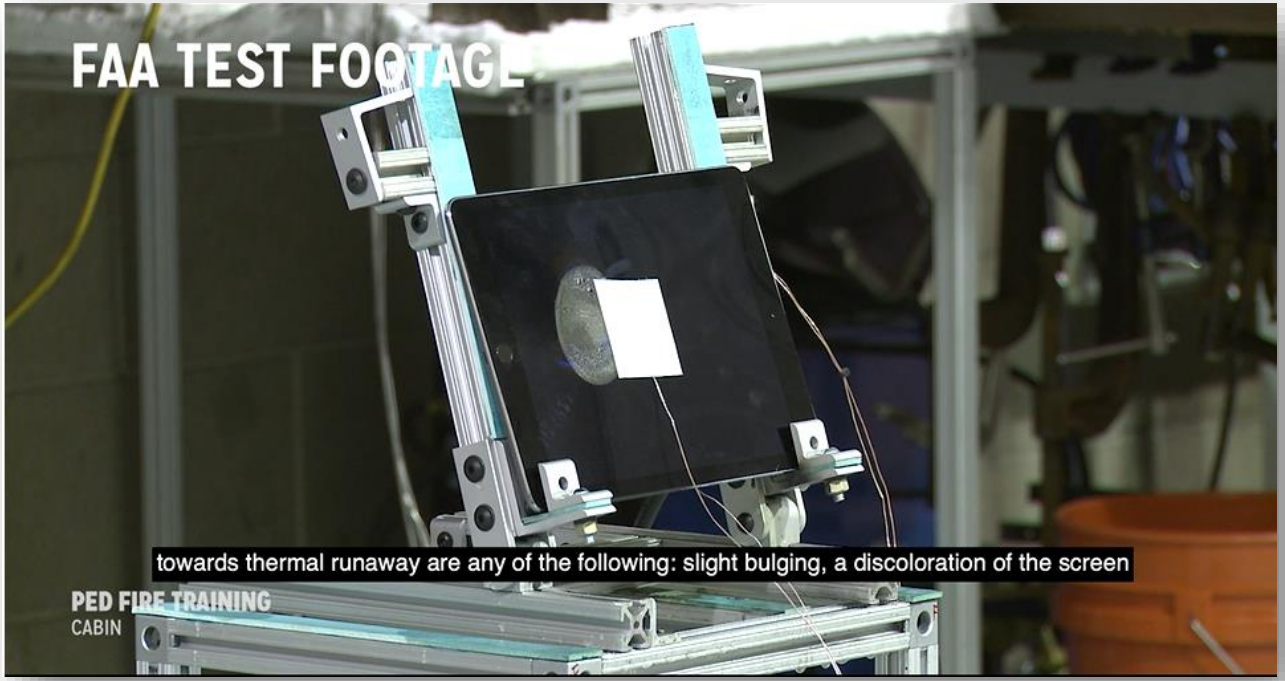
Conceptual Explanation of Propagation (Cabin/Flight Deck Videos)

Demonstrates the transfer of heat energy from a cell experiencing thermal runaway that results in thermal runaway in one or more adjacent cells or batteries.

Comparison of Battery Sizes in Devices and Subsequent Reaction (Cabin/Flight Deck Videos)



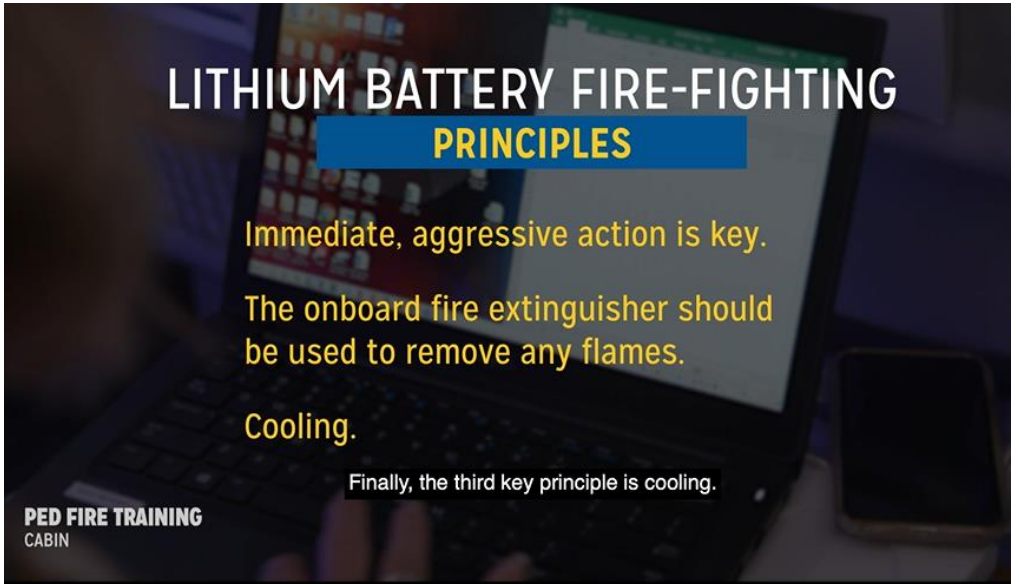
First Signs of Thermal Runaway (Cabin/Flight Deck Videos)



Lithium Battery Fire-fighting Principals (Cabin/Flight Deck Videos)

1. **Spray with fire extinguisher.**
2. **Douse with liquid to cool, especially into available openings*.**
3. **Don PPE.**
4. **Continue fire fighting until completely cool.**
5. **Safest place to store cooled device is completely submerged in liquid.**

***For Flight Deck, Emphasis is also on immediate removal.**



Consequences of Improper Cooling (Cabin/Flight Deck Videos)

Possible catastrophic event or dense accumulation of smoke (Flight Deck video is slightly different, but concepts remain consistent).

Hazards and Specific Mitigation Measures – Flight Deck

HAZARDS:

- **Aircraft oxygen intensifying fire (e.g. failed oxygen mask hose)**
- **Proximity to instruments/electronics**
- **Smoke accumulation and vision obstruction in the flight deck.**

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Hazards and Specific Mitigation Measures – Cabin

HAZARDS:

- **Aircraft oxygen**
- **PEDs plugged into a power source**
- **Aircraft equipment – difficult storage locations**
- **PEDs Crushed/lost in seats or hidden in the seats**
- **Fires in Overhead Bins**

Hazards and Specific Mitigation Measures – Cabin

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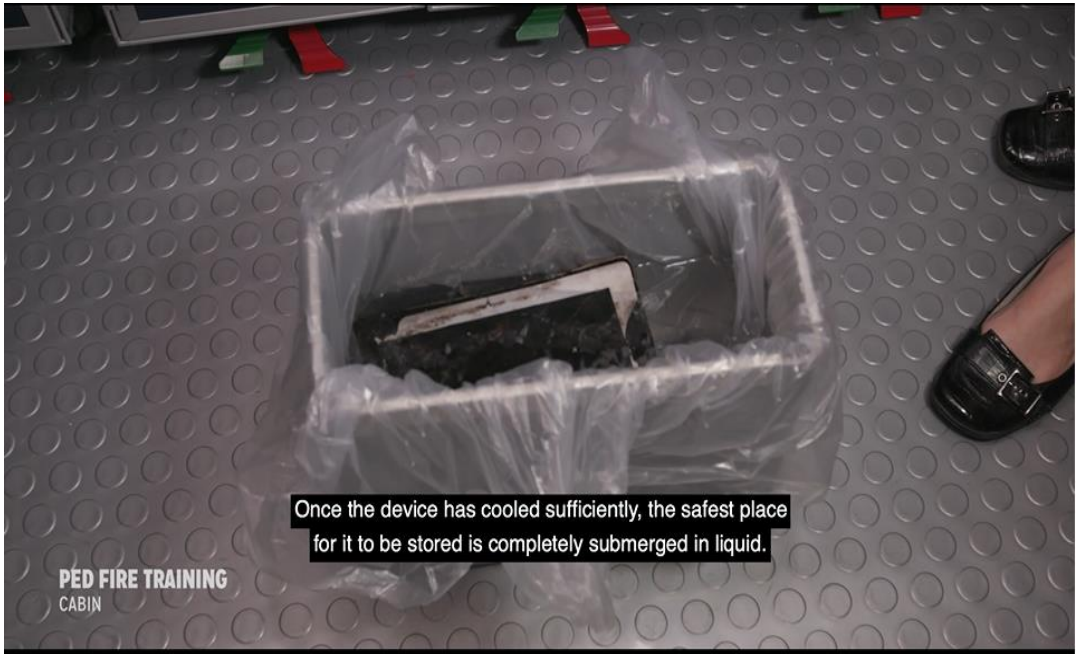
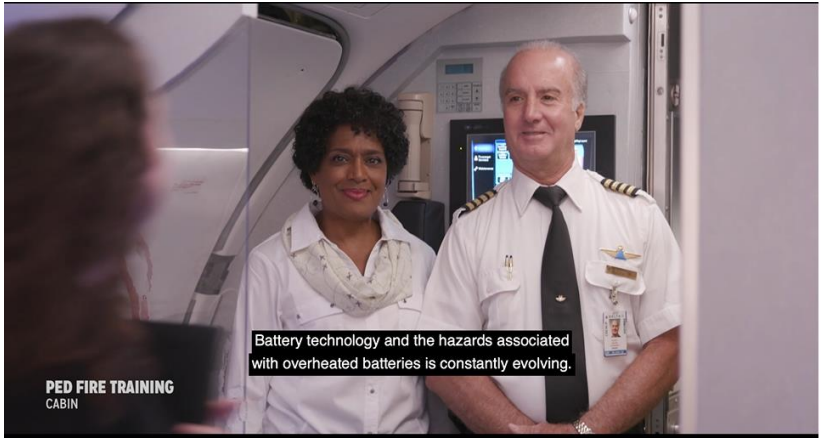
Containment Process (Cabin/Flight Deck Videos)

Wait until the device is sufficiently cooled (15min is recommended for the cabin), submerge device in liquid.



Closing Summary (Cabin/Flight Deck Videos)

- **Quick recap of potential hazards of overheated electronic devices and effective techniques to mitigate them.**
- **Operators encouraged to update their training procedures and programs based on the information in the videos.**



Questions?

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To Access Videos, Visit:
https://www.fire.tc.faa.gov/Training/