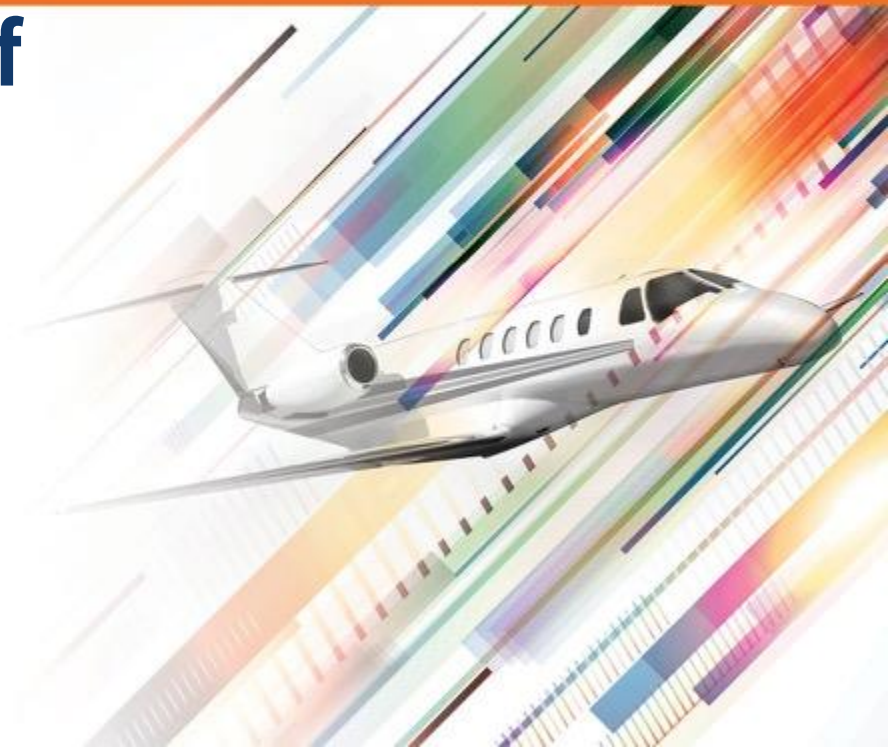


Mitigating the Risk of On-Board Lithium- Battery Devices

Tuesday, October 10, 2017

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THE THREAT IS REAL!

Video

WHAT ARE THE ODDS?

50+ Million Li-Ion Batteries Flying On-Board Every Day

- Battery Associations say that 1 in 10 million may spontaneously combust because of defects!
- More RECALLS happening all the time

WHAT ARE THE ODDS?

5 Incidents Per Day May be Conservative

- 5 Incidents of runaway battery fires could happen in aircraft EVERY DAY because of these defects!
- Plus the ODDS INCREASE with additional risk factors:
 - Over-charging the battery
 - Crushing or damaging a Li-Ion powered device
 - Black Market Batteries & Power Banks/Chargers

NO FAA REGULATIONS

SAFO Offers Recommended Guidance Only

- SAFO 09013 – is 9 Years old, before Tablets and Waterproof devices were introduced
- SAFO 16001 - Halon 1301 determined incapable of preventing Li-Ion explosion – in 2016
- May 2017 – Water dousing (per SAFO 09013) ineffective at penetrating tablet batteries
- Increased concern over toxic smoke emitted during runaway

ADDED RISKS

Business Aircraft

- Smaller Cabins – toxic smoke will impact crew faster
- Many times there is No Flight Attendant!
- One Laptop can emit a large amount of toxic smoke
- Therefore time is of the essence

HOW TO MITIGATE THIS RISK

Develop a Plan

- Thorough Consideration and Research – Several products on market
- SMS Program Integration
- Crew Training & Practice
- Passenger Training and Education

KEY CONSIDERATIONS

Fire Containment Questions

- Where will I store the fire containment unit for easy access?
- Will crew have their own unit in cockpit or share with cabin?
- How fast and easy will it be to deploy?
- How many steps for deployment?
- Is it important for the unit to contain the toxic smoke and fire?
- Do we need it to work with and without water if I have limited access to liquids?

KEY CONSIDERATIONS

Fire Containment Questions

- What kind of maintenance requirements are there for the unit?
- Is there any shelf-life limits for the unit?
- Has the unit been tested and burn certified?
- Other criteria - tbd

IMMEDIATE RESPONSE ACTION

Develop Your Response

- Sample of Immediate Response Plan

FIRE BAG FOR LITHIUM BATTERY FIRE	
Flight Attendant	Pilots
<ul style="list-style-type: none"> <input type="checkbox"/> Move Passenger <input type="checkbox"/> Remove power source <input type="checkbox"/> Get device in Fire Bag and seal bag 	<ul style="list-style-type: none"> <input type="checkbox"/> Remove Power from cabin <input type="checkbox"/> Monitor Situation

Sample Response

Reevaluate to Ensure Safety Protocol

Notify the PIC by shouting “Battery fire! Cut cabin power!”

- Move PAX by assertively saying, “Move” (and point to the direction you want the passenger to move, if possible)
- Remove power from device: Unplug or have pilots shut off power to device
- Don smoke hood – Flight Attendant and passengers
- **Use Halon** when flames are present, **followed by liquids** to cool FIRE THREAT
- Don protective gloves
- Once Cool, put FIRE THREAT into Fire Bag and SEAL
- Do not reopen bag for any reason
- Stow Fire Bag in baggage compartment
- Monitor situation
- Notify PIC of status

As a flight crew, we practice the situation quarterly with commands.

It is important to stress that any fire threat must be reacted to actively and aggressively to ensure a safe aircraft.

