Mitigating the Risk of On-Board Lithium-Battery Devices

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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

<table>
<thead>
<tr>
<th>FIRE BAG FOR LITHIUM BATTERY FIRE</th>
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</thead>
<tbody>
<tr>
<td>Flight Attendant</td>
</tr>
<tr>
<td>☐ Move Passenger</td>
</tr>
<tr>
<td>☐ Remove power source</td>
</tr>
<tr>
<td>☐ Get device in Fire Bag and seal bag</td>
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</tbody>
</table>
Sample Response

Revaluate 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.