

Notice Number: 021522

Issued Date: February 16, 2022

Issuing Department: GMR Safety

Audience: All GMR Employees

Subject: Lithium/Lithium Ion Battery Self Ignition/Thermal Runaway

EVENT DESCRIPTION

Recently, a Global Medical Response (GMR) flight team was preparing to depart from a hospital helipad after loading a patient for transport. The pilot was about to roll throttle from flight idle to full when s/he noticed a flash/flame reflection on the front left windscreen followed by screams and smoke filling the cabin. The pilot immediately rolled the throttle off, shut off the fuel valve and applied full rotor break. The nurse pulled the paramedic out of the aircraft and yelled for assistance. The flight suit was cut away from the paramedic to expose extensive burns on the left side. The nurse reported that something seemed to have exploded and burst into flames from inside one of the pockets of the paramedic's flight suit. Two burn-damaged lithium batteries were found on the ground next to the aircraft. The pilot contacted Operational Control Center (OCC) immediately to report the event. A ground ambulance was called to the scene to assist while an additional two aircraft were called to transport the patient and the injured paramedic.

The paramedic was flown to a regional burn center where s/he was determined to have sustained burns to a significant portion of his/her body.

ADDITIONAL INFORMATION

The two types of batteries commonly used to power consumer Personal Electronic Devices (PEDs) and certain medical devices brought on aircraft, vehicles or carried on persons are lithium batteries (disposable) and lithium-ion batteries (rechargeable). Both these types are capable of ignition and subsequent explosion due to overheating. Overheating results in thermal runaway, which can cause the release of either molten burning lithium or a flammable electrolyte. Once one cell in a battery pack goes into thermal runaway, it produces enough heat to cause adjacent cells to go into thermal runaway. The resulting fire can flare repeatedly as each cell ruptures and releases its contents. In February 2018, the U.S. Consumer Product Safety Commission's Status Report on High Energy Density Batteries Project reported over 25,000 overheating or fire incidents involving more than 400 types of lithium battery powered consumer products that occurred over a five-year period. Image 1 illustrates extreme damage to a Nomex IIIA flight suit after two Lithium Ion batteries exploded/ignited in the breast pocket.

Image 1



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LITHIUM ION BATTERIES ARE FOUND IN MANY CONSUMER AND MEDICAL DEVICES INCLUDING:

- cellular phones
- e-cigarettes and vaping pens
- laptop computers and iPads/tablets
- certain medical devices with rechargeable batteries or battery packs

WHAT YOU NEED TO KNOW:

- Batteries not installed in their respective PED or medical device must be stored in a cool dry area in accordance with the manufacturer's guidance.
- Never carry spare batteries in your pocket. Batteries can overheat, come in contact with each other or other conductive objects such as keys causing thermal runaway or explosion.
- Use caution when carrying these devices in pockets, especially under multiple layers of clothing as this could create condition for overheating (especially with damaged or defective devices).
- If batteries must be transported outside of their approved device (uninstalled) ensure that you protect the battery terminals to prevent overheating and thermal runaway.
- Avoid storing devices that contain lithium or lithium ion batteries in areas where they may overheat (near external heat sources, direct sunlight, cell phones that are under multiple layers of clothing, etc.).
- Patients being treated and/or transported in ground or air vehicles may have Lithium Ion/Lithium batteries on their persons, be aware of this risk and secure appropriately if required.
- Do not cover devices while they charge, this can cause overheating and thermal runaway.

QUESTIONS?

Contact a member of the GMR Air/Ground Safety Team.

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