A bold voice for transportation workers

# IMPROVING THE SAFETY OF AIR TRANSPORTATION OF LITHIUM BATTERIES

Fire is the most serious threat to an aircraft in flight. The situation is even more critical if the fire is of unknown origin or cannot be controlled. As extensive testing and incident data have shown, lithium batteries have the potential to self-ignite or propagate a fire. In order to ensure the safety of the aircraft and its occupants, the air shipment of lithium batteries must be fully regulated as dangerous goods.

Lithium batteries are commonplace in modern life. Lithium-ion batteries, which are generally rechargeable, power cell phones, laptop computers, and power tools. Lithium-metal batteries are typically not rechargeable and provide power to watches, flashlights, and digital cameras. While the vast majority of lithium batteries are transported without incident; when they are defective, damaged, or subjected to a short circuit or significant heat source, they have the potential to self-ignite, which can lead to catastrophic consequences.

Lithium batteries can burn violently, emitting sparks, flames, and large amounts of smoke. They are also self-perpetuating; the heat generated from a single-cell fire can cause surrounding cells to ignite as well. Further, lithium battery fires are notoriously difficult to extinguish. While a fire involving a limited number of lithium-ion batteries may be controlled by the active fire suppression system in the under-floor compartments of a passenger aircraft, FAA testing has shown that lithium-metal batteries are unresponsive to the traditional extinguishing agent, Halon, used aboard aircraft.

The current rules on lithium battery shipments are woefully inadequate to prevent onboard aircraft fires and safeguard passengers and flight crews. Inexplicably, the lithium-ion and lithium-metal batteries used in the vast majority of consumer applications are exempt from many of the federal hazardous materials transportation regulations, such as the requirements to place a dangerous goods label on the package, to notify the pilot-in-command of their presence, to perform an acceptance check of the package by airline personnel, and to train shippers to prepare the packages, and any of the cargo compartment quantity limitations normally applied to hazardous materials. Under existing regulations, a flight crew would not be made aware of a pallet containing thousands of lithium-ion laptop batteries, yet a 10-pound package of flammable paint or dry ice (neither of which can self-ignite) would be subject to the full scope of the dangerous goods provisions.

The National Transportation Safety Board (NTSB) issued recommendations to fully regulate lithium batteries as hazardous cargo following a fire that destroyed a UPS cargo aircraft in Philadelphia in 2006. Unfortunately, there have been many other documented incidents since then, including a tragic accident in Dubai in September 2010 that killed two pilots during an attempted landing following the outbreak of a cargo fire. While that accident is still under investigation, it is known that large quantities of both lithium-ion and lithium-metal batteries

were being carried as cargo. Regardless of the initial cause of the fire, these large quantities of batteries may well have greatly intensified the fire and caused its rapid propagation, significantly contributing to the severity of the event. Had the quantities of batteries been restricted, or their loading limited to cargo compartments with active fire suppression, the outcome of the accident may have been different. Furthermore, the knowledge that large quantities of lithium batteries were being carried as cargo might have influenced the flight crew's decisions during the emergency and the selection of a diversion airport. Pilot notification, quantity, and loading restrictions are only possible with the full regulation of all lithium battery shipments.

Last year, the Pipeline and Hazardous Materials Safety Administration (PHMSA) issued a notice of proposed rulemaking (NPRM) on the air shipment of lithium batteries. TTD submitted comments in support of proper regulation of lithium batteries and specifically endorsed the comments filed by the Air Line Pilot Association. In addition to regulatory action on this problem, the House Transportation and Infrastructure Committee in the 111th Congress passed Hazmat Reauthorization that included provisions on lithium batteries that tracked the NPRM. We urge the Administration to quickly issue a final rule on the air transport of lithium batteries that includes the changes and recommendations endorsed by transportation labor.

The full regulation of lithium batteries as dangerous goods would have a significantly positive impact on the safety of the air cargo supply chain. Improved packaging standards would help prevent damage to shipped batteries. Dangerous goods labels would ensure worldwide recognition that shipments have the potential to cause an incident if mishandled. An acceptance check would provide an opportunity to detect package damage or non-compliance with the regulations. Notifying pilots is essential to increase flightcrew members' awareness, influence their decision-making, and allow them to communicate hazard information to emergency responders in the event of an incident.

Because of the inability of aircraft fire suppression systems to extinguish a fire involving lithium metal batteries, the final rule should extend the current ban on bulk shipments of these items on passenger aircraft to all-cargo aircraft until adequate packaging materials can be developed.

The proposed rule would have a positive and substantial effect on the safety of lithium battery shipments. TTD urges that a final rule be swiftly implemented to improve the safe air transport of lithium batteries.

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