Fire in the Sky

By First Officer Mark Rogers (United), Director, ALPA Dangerous Goods Program

Several hours after leaving Los Angeles, everyone aboard the B-747 to Japan had settled in for a long flight. The first indication of a problem was the fire bell in the cockpit, alerting the flight crew that smoke had been detected in the aft cargo compartment. Following the emergency checklist, the crew activated the Halon fire-suppression system and began a diversion back to the mainland, but it was already too late.

Unbeknownst to the flight crew or anyone else aboard the airliner, a pallet of 120,000 small lithium-metal batteries, the type used in digital cameras and flashlights, had been damaged just before being loaded onto the airliner. The pallet had no special marking or labeling and nothing to indicate that batteries were inside.

Although the fire took 2½ hours to be noticed on the outside of the pallet, once ignited, the fire could not be extinguished. Halon has no effect on a fire involving lithium-metal batteries. The fire burned at 1,400°F (above the melting point of aluminum) and quickly involved all 120,000 batteries, along with the batteries on an adjacent undamaged pallet, creating a pressure pulse sufficient to cause the cargo compartment liner to fail.

While the above story is fictitious, it is firmly rooted in an actual incident that occurred at Los Angeles International Airport on April 28, 1999. After unloading a pallet of lithium-metal batteries from a Northwest Airlines flight from Osaka, a ramp worker damaged the pallet with a forklift. Approximately 3½ hours later, the pallet erupted into flame and also involved an adjacent pallet of undamaged batteries. The Los Angeles Fire Department needed nearly half an hour to extinguish the fierce fire started and fueled by batteries that were exempted from nearly all of the dangerous goods regulations.

Responding to an NTSB recommendation, the FAA Technical Center in Atlantic City, N.J., undertook a flammability study of bulk-packaged lithium-metal batteries. While all batteries have an electrical hazard because of the possibility of short circuit, the study brought to light the unique fire hazards that lithium-metal batteries pose. The study found that a fire that begins with one battery can quickly turn the entire shipment into an inferno.

CHIEF GREG MASI, DISPATCHER PHIL FCC

Even before the fire in Los Angeles, ALPA had been working to improve the safety of batteries shipped as cargo aboard airliners. ALPA was responding to DOT rulemaking initiatives that have still not been incorporated into final rules. After the FAA completed its flammability study, ALPA petitioned the DOT to ban lithium-metal batteries on all airliners because of the batteries' unique danger. In December 2004, a DOT emergency rule banned bulk shipments of lithium-metal batteries from passenger airliners but left unchanged the rules for all-cargo aircraft. ALPA applauded the quick action to protect passengers but strenuously objected to the DOT's failure to protect cargo flight crews from the same danger. The situation remains unchanged today.

ALPA has also been pressing for improved standards for shipping the rechargeable lithium-ion batteries used in laptop computers and other small electronic devices. While Halon has been shown to be effective in extinguishing fires involving lithium-ion batteries, recent incidents and the recall of millions of these batteries highlight the potential hazard from these batteries in transportation. Because flight and cabin crews have the tools and training to extinguish such a fire in the rare event that one does occur, ALPA has not advocated a ban of laptop batteries in airliner cabins. The Association does, however, believe that these batteries should be afforded the full protection of the dangerous goods regulatory system when shipped as cargo and that testing should be performed to determine whether inflight recharging of these batteries is safe.

The February accident involving a UPS DC-8 that was destroyed by a cargo fire (see "Strength in Unity: Carrying the Torch for HAZMAT and Cargo Safety," September) has finally spurred the DOT into action. New regulations on shipping these batteries as cargo are being drafted, and the United States has submitted several papers for consideration by the International Civil Aviation Organization's Dangerous Goods Panel in December. ALPA has submitted its own proposals to ICAO through ALPA's membership in the International Federation of Air Line Pilots Associations' Dangerous Goods Committee. ALPA continues to urge the NTSB to put additional pressure on the DOT and the FAA to address this serious safety risk. With millions of batteries shipped every year, the clock is ticking, and there is no time to lose.