



ICAO SAFETY

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Recommendations arising from accident investigations

Progress?

Abu Dhabi, U.A.E.



Overview

- Three aircraft accidents involving cargo fire
 - Lithium batteries involved
 - Recommendations for action to be taken



UPS 1307 (Philadelphia, 7 February 2006)

- Fire suppression systems be installed in cargo compartments of all cargo aircraft
 - LB to be transported in crew accessible locations where portable fire suppression systems can be used



UPS 1307

- Reduce risk of lithium metal batteries becoming involved in fires by transporting in fire resistant containers and/or in restricted quantities at any single location on the aircraft



UPS 1307

- Require operators to report all incidents involving primary and secondary lithium batteries – on board, loading, unloading – and retain failed items for evaluation purposes



UPS 1307

- Analyze causes of all thermal failures and fires involving primary and secondary lithium batteries



UPS 1307

- Eliminate regulatory exemptions for packaging, marking and labelling of small secondary lithium batteries



UPS 6 (Dubai, 3 September 2010)

- Installation of fire suppression systems – class E cargo compartments – or option to control class E cargo fire without requiring crew member to enter compartment



UPS 6

- Detect early development of fire through detection of thermal radiation (in conjunction with smoke/fumes sampling)
- Require ULD or containers to be capable of internally containing or suppressing a fire agent



UPS 6

- Evaluate structural-acoustic coupling phenomena
 - Harmonic vibration resulting from combination of engine and fuselage vibration
 - Modify UN Manual of Tests and Criteria T.3 (vibration) if necessary



UPS 6

- ICAO to review hazardous materials classification for class 9 materials packaging
 - “it is not clear that the current Class 9 hazard communication or quantity limits adequately reflect the inherent risks to aviation safety”



UPS 6

- ICAO to develop a SARP for package level protection of batteries being shipped
 - Thermal degradation
 - Retard propagation to other packages
 - Increase amount of time for package to provide additional source of fuel for on-board fires initiated by other sources



Asiana 991 (Korea Strait, 28 July 2011)

- Require that Class 3 flammable liquids and fully regulated Class 9 lithium batteries be physically segregated when stowed on board an aircraft such that packages containing these materials may not be placed on the same or adjacent pallets or ULDs.
- Establish maximum loading density requirements that restrict the quantities of Class 3 flammable hazardous materials or Class 9 lithium batteries stowed on a single pallet or ULD, or on a group of pallets or ULDs, within an aircraft such that cargo fires can be effectively managed by on-board fire suppression capabilities.



Asiana 991

- Develop loading standards for ensuring that flammable dangerous goods (Class 3) and lithium batteries classified as dangerous goods (Section 1, 1A) are loaded in a Class C cargo compartment or that they are loaded on ULDs equipped with a fire extinguishing system or made of fire-resistant materials.



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