ICAO International Multidisciplinary Approach to Lithium Battery Transport

Multidisciplinary Meetings

All Three Multidisciplinary Lithium Battery Transport Coordination Meeting Dates:

Third Meeting

28 to 30 July 2015
(Montreal, Canada)

Second Meeting

9 to 11 September 2014
(Cologne, Germany)

First Meeting

4 to 6 February 2014
(Atlantic City, NJ, United States)

Multidisciplinary Participants

- Annex 6 – Operation of Aircraft
- Annex 8 – Airworthiness of Aircraft
- Annex 18 – The Safe Transportation of Dangerous Goods by Air
- Air Navigation Bureau – manages the safety strategies of ICAO, including the oversight of Annexes 6, 8, & 18.

Third Multidisciplinary Recommendations Summary

- Background: Concerns related to the transport of lithium batteries by air were provided by the Int'l Coordinated Council of Aerospace Industries Associations (ICCAIA) and the Int'l Federation of Air Line Pilots' Association (IFALPA) (DGP-WG/15 Report in Appendix D).
- After DGP-WG/15 (April 2015), Boeing and Airbus issued notices to operators warning of the potential for a fire involving high density lithium batteries to exceed the capability of aircraft cargo compartment fire protection systems

Third Multidisciplinary Recommendations Summary

- Both airframe manufacturers support a prohibition on the carriage of high density packages of lithium ion cells and batteries on passenger aircraft.

- Both airframe manufacturers recommend that operators that choose to transport lithium batteries as cargo should conduct a safety risk assessment.

- This was supported by the FLTOPSP Panel.

Annex 6 Recommendation

- The statement developed by the FLTOPSP was as follows:
- “The Flight Operations Panel is of the opinion that lithium batteries and cells should be transported in aircraft engaged in commercial air transport operations as cargo only if acceptable criteria can be identified to carry out appropriate safety risk management activities in order to ensure the safe carriage of lithium batteries and cells.

FLTOPSP Annex 6 (October 2015)

- As a minimum, such criteria should include:
- a) capabilities of the operator;
- b) type of operation (i.e. passenger, cargo);
- c) overall capability of the airplane and its systems;
- d) packing, packaging, and quantity of batteries and cells;

FLTOPSP Annex 6

- e) containment characteristics of ULDs;
- f) the specific hazards and safety risks associated with each battery and cell type to be carried alone or in combination; and
- g) the chemical composition of the batteries and cells.”

FLTOPSP Annex 6

- The FLTOPSP secretary stressed that while the statement was reached by consensus, a number of members were of the opinion that an outright ban on the transport of lithium batteries as cargo on passenger aircraft should be imposed until a safe method of transport was established.

Dangerous Goods Panel Discussions October 2015

- Adopted:
  - a 30% State of Charge requirement for lithium ion batteries.
  - Limitation on the number of packages to be offered under the Section II provisions.
- Included in Part 7 a reference to safety risk assessments for transporting lithium batteries.

Airworthiness Annex 8

- The fire protection capabilities and certification of original equipment manufacturers (OEMs) airframes and systems were developed considering the carriage of general cargo and not the unique hazards associated with the carriage of dangerous goods, including lithium batteries. A growing body of test data has identified that existing cargo compartment fire protection systems certified to EASA CS 25.857..

Airworthiness Panel Annex 8

- And US CFR Part 25.857 are unable to suppress or extinguish a fire involving significant quantities of lithium batteries, resulting in reduced time available for safe flight and landing of an aircraft to a diversion airport.

Airworthiness Panel Annex 8

Therefore, continuing to allow the carriage of significant quantities of lithium batteries within today's transport category aircraft cargo compartments is an unacceptable risk to the air transport industry. In consequence, lithium batteries and cells should only be transported in aircraft engaged in commercial air transport operations as cargo if acceptable criteria can be identified to carry out appropriate safety risk management activities in order to ensure their safe carriage.

Performance-based criteria to improve safety of air transportation

- Performance based standards for packaging or cells and batteries should be developed. This work is being done by ICAO.
  - Performance standards would need to be developed on risk standards and processes that demonstrate a cell/battery/package is safe under thermal runaway conditions
    - No hazardous flame outside the package
    - External surface temperature limit
    - No hazardous fragments can exit the package and package must maintain structural integrity
    - Limitations on the quantity of flammable gases and their effects

Cargo Loading Controls

- Suggestion to limit the number of lithium batteries loaded in one location and segregating them from other dangerous goods.
- Load lithium batteries under a fire resistant containment cover or unit load device with a fire suppression system

Conclusions

- Operators should perform a safety risk assessment to determine whether risks associated with the transport of lithium batteries as cargo on cargo aircraft can be mitigated to achieve an acceptable level of safety.
- Lithium battery transport is not just a dangerous goods concern but an aviation safety concern.

QUESTIONS?