

Third Int'l Multidisciplinary Lithium Battery Transport Coordination Meeting Summary

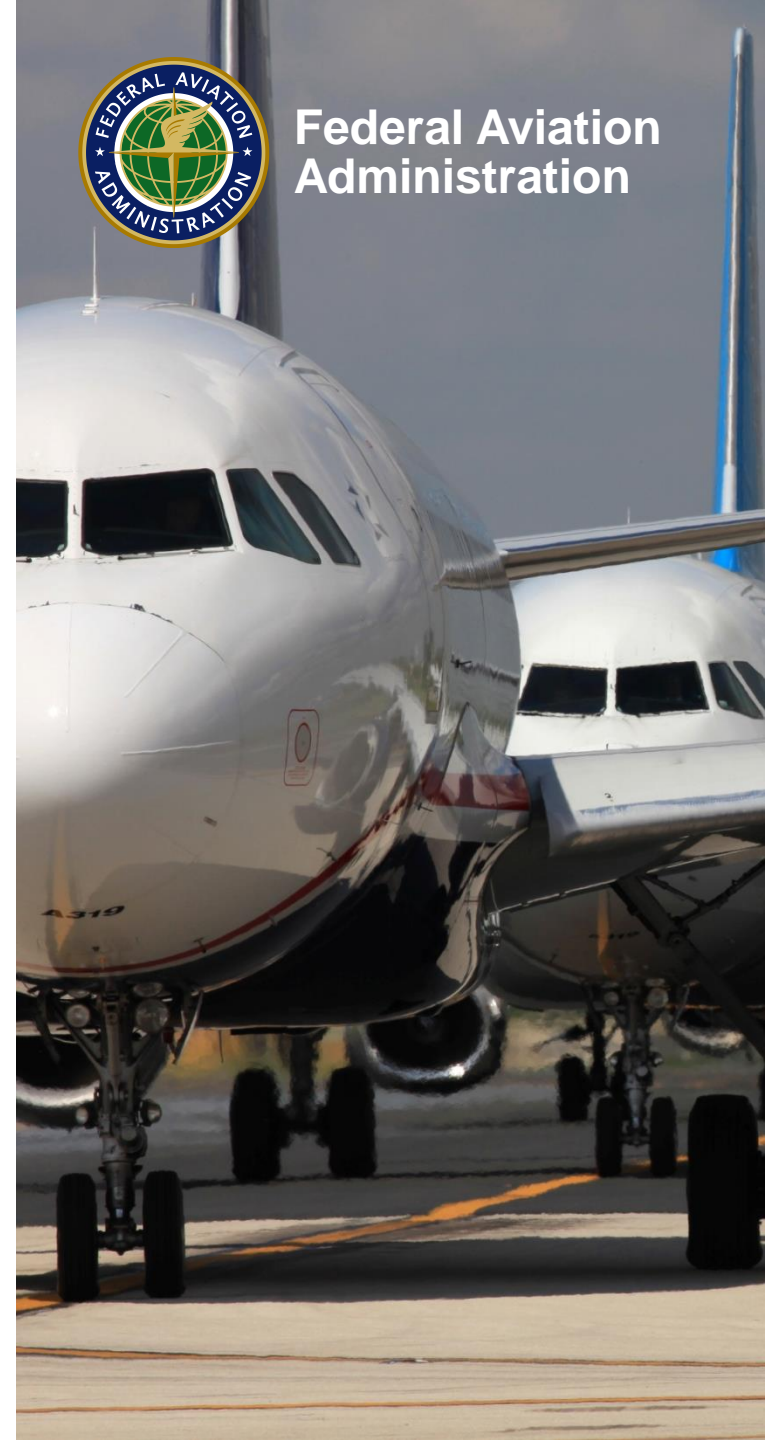
Presented to: Systems Fire WG

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Federal Aviation
Administration



International Multidisciplinary Lithium Battery Transport Coordination Meeting

**Third Meeting
Montreal, Canada
July 28-30, 2015**



Goals

- **To permit safe transport of lithium batteries by air.**
- **Considerations:**
 - ICCAIA/IFALPA call for ban of the shipment of lithium-ion batteries as cargo on passenger aircraft until safe means of transport are developed.
 - Boeing/Airbus notice to operators
 - Cargo compartment fire protection systems are not designed for fires of this type
 - recommend operators perform a Safety Risk Assessment.
 - Several large operators have voluntarily instituted bans on transport of lithium batteries.
 - New FAA flammable vent gas data



Objective

- **Develop performance standards, including packaging performance standards as part of a comprehensive strategy to mitigate risks posed by lithium batteries as cargo.**
- **The meeting developed high-level packaging performance standards as a basis for the development of more detailed standards.**



Packaging Performance Standard

- **Discussion on definition of “high density” shipments:**
 - “Quantities of lithium batteries which had the potential to overwhelm the cargo compartment fire protection features”
- **Discussion on external fire threats**
 - There was no consensus on whether there should be consideration of effects of an external fire event on the package. The airframe manufacturers expressed the need to consider the external fire threat.



High Level Packaging Standards

- **The meeting agreed to the following standards to be appropriate to mitigate the risks posed by a fire developing inside a package containing lithium batteries or cells and determined that they could be met at either the package or battery / cell level**
 1. No hazardous amount of flame is allowed outside the package;



High Level Packaging Standards

2. The external surface temperature of the package cannot exceed the amount that would ignite adjacent packing material or cause batteries or cells in adjacent packages to go into thermal runaway
3. No hazardous fragments can exit the package and the package must maintain structural integrity; and
4. The quantity of flammable vapor must be less than the amount of gas that when mixed with air and ignited could cause a pressure pulse in a volume that could dislodge the overpressure panels of the compartment or damage the cargo liner.



Interim Recommendations

- **Noting that a performance standard could take years to develop, interim measures were discussed. The need for a multi-layered mitigation strategy was emphasized**
- **The meeting recommended that operators perform a safety risk assessment**
 - Consider types and quantities of lithium batteries being transported
 - Consider limited capabilities of the fire protection systems in the event of a lithium battery fire.
 - Recommended that SRA guidance be developed for operators and regulators.



Interim Recommendations

- **Mitigation measures were discussed**
 - Reduced state of charge.
 - Low states of charge reduce or prevent propagation of thermal runaway.
 - Potential for cell degradation if charge is too low.
 - May be suitable for some cell chemistries
 - Difficult to regulate and oversee.
 - Cargo loading controls
 - Limit the number of batteries in one place
 - Segregate from other dangerous goods
 - Section II discussed
 - FCC / Fire resistant ULDs



Conclusions

- **Development of a detailed package performance standard based on the high level standards is needed.**
- **Airframe manufacturers stated that the concerns raised in the notice to operators and recommendations which were provided to them would remain until safer conditions were established and implemented to safely transport lithium batteries. A formal proposal will be brought to the next DGP meeting.**



Meeting Report

- **The full report of the third International Multidisciplinary Lithium Battery Transport Coordination Meeting is available on the ICAO Dangerous Goods Panel web site:**
- **<http://www.icao.int/safety/DangerousGoods/Third%20International%20Multidisciplinary%20Lithium%20Batt/Discussion%20of%20Issues%20Regarding%20Performance-Based%20Standard%20for%20Air%20Transportation%20of%20Lithium%20Batteries.pdf>**



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