



InFO

Information for Operators

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http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/info

An InFO contains valuable information for operators that should help them meet certain administrative, regulatory, or operational requirements with relatively low urgency or impact on safety.

Subject: The Transportation of Portable Electronic Devices (PED) in Checked Baggage

Purpose: This InFO alerts air carriers to safety concerns involving PEDs when transported in checked baggage.

Background: As a result of recent security measures which involved the potential of prohibiting the carriage of PEDs larger than a cellphone or smartphone in the cabin on flights from certain points of departure into the U.S.; one option was for passengers to place their large PEDs into their checked baggage if they wanted to transport them on these flights. This option would have created an unexpected increase in the number of lithium battery-powered devices in the cargo compartment of passenger aircraft. It was noted that there was little research data available on the behavior, effects and risks associated with PEDs being placed in a passenger's checked baggage. Except for loose batteries and e-cigarettes in checked baggage, the Federal Aviation Administration (FAA) does not have significant incident data on passenger PEDs in checked baggage.

To address the lack of sufficient research data on the behavior and effects of a large number of PEDs placed in the cargo hold on passenger aircraft, the Fire Safety Branch at the FAA Technical Center conducted tests to assess the potential hazards from the carriage of laptop computers and other large PEDs in checked baggage. Included was research to identify possible risk mitigation options. The objectives of the testing were to:

- 1) Determine the relative effectiveness of the cargo compartment Halon 1301 fire suppression system against the potential fire scenarios involving devices containing lithium batteries now carried as checked baggage; and
- 2) Determine whether there are potential mitigation options, such as the use of enhanced packaging to contain flames and gas from spreading outside a package. The specific tests reflect cargo compartment loading procedures in use by air carriers affected by the security policy.

Discussion: The FAA Tech Center has conducted tests utilizing fully charged laptop computers inside suitcases. The suitcases were all soft sided but varied in the density and types of items inside, as well as, the construction of the outer case. A heater was placed against a lithium ion cell in the battery of a laptop to force it into thermal runaway. In some tests the suitcases were filled with clothes, shoes, etc, but no other hazardous goods. In other tests of this same scenario, some normally permitted hazardous materials

were added to the suitcase contents. The results of this test condition yielded the most troubling results. As a result of this, it was concluded that if a PED is packed in a suitcase with permitted hazardous materials and a thermal runaway event occurs, there is the potential for the resulting event to exceed the capabilities of the airplane to cope with it.

Although most consumer PEDs (including but not limited to cell phones, smart phones, personal digital assistants (PDA) devices, electronic games, tablets, laptop computers, cameras, camcorders, watches, calculators) containing batteries are allowed in carry-on and checked baggage, the FAA believes that there is a very low frequency of lithium battery-powered devices being voluntarily transported in checked baggage. The FAA's belief is largely based on the understanding that most passengers prefer keeping their devices on their persons to use, during flight or to prevent loss or theft in transit.

With regard to the safety risk posed by PEDs, the ICAO *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (the Technical Instructions) recommend that these devices be carried in the cabin on the basis that, should a PED initiate a fire, the cabin crew can expeditiously identify the incident, take appropriate firefighting action, and monitor the device for possible re-ignition. As noted above, PEDs that are in checked baggage or consolidated by the airline operator and loaded into the cargo compartment may create conditions beyond what the airplane was designed to manage.

Therefore, for the reasons stated above, devices containing lithium metal or lithium ion batteries (laptops, smartphones, tables, etc.) should be transported in carry-on baggage and not placed in checked baggage. When that is not possible: the devices should be completely powered down to the OFF position (they should not be left in sleep mode), protected from accidental activation, and packed so they are protected from damage.

Operational Areas: The FAA expects air carriers to apply Safety Risk Assessments (SRA) through their Safety Management System (SMS) processes to identify and mitigate the risks associated with the carriage of these devices. In order to assist air carriers in responding to rapidly changing circumstances or regulatory prohibitions or controls, the FAA requests air carriers provide their local Certificate Holding District Office (CHDO) and Hazardous Materials Principal Inspector or other appropriate hazardous material contact with any proposed plans of operation within any prohibitory or restrictive guidelines.

Recommended Action: Operators should review the "Safe Transport of PEDs in Passenger Aircraft" presentation on the testing that was conducted by the FAA's William J. Hughes Technical Center's Fire Safety Branch to gain a better understanding of the tests results. The presentation can be accessed by visiting: https://www.fire.tc.faa.gov/temp/LT_FH/NoVideos_Safe_Transport_of_Laptops.pptx. The FAA also encourages operators to recommend their customers avoid placing PEDs in checked baggage.

Contact: Questions or comments regarding this InFO should be directed to the FAA Office of Hazardous Materials Safety, ADG-200, Bryan Buchanan at 817-823-0359.