



WORKING PAPER

**DANGEROUS GOODS PANEL (DGP)
MEETING OF THE WORKING GROUP OF THE WHOLE**

Memphis, 30 April to 4 May 2007

Agenda Item 2: Development of recommendations for amendments to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) for incorporation in the 2009/2010 Edition

REPORTING OF INCIDENTS INVOLVING BATTERIES

(Presented by R. Richard)

SUMMARY

This paper proposes to require reporting of incidents involving batteries of any type.

Action by the DGP-WG is in paragraph 2.

1. INTRODUCTION

1.1 At the preceding meeting of the working group of the whole, it was proposed that incidents involving batteries of any type should be required to be reported in accordance with Part 7;4.4 (see DGP-WG/06-WP/27). A list of incidents was attached for information and it was noted that in a number of cases, the batteries were of a type that are excepted from the Technical Instructions when certain prescribed conditions are met and as such it is not clear whether the reporting requirements of Part 7 apply. Several reported incidents involved fires that were the result of improper packaging or failure to meet applicable preparation and safety requirements. Since WG/06 several additional incidents involving battery fires onboard aircraft have occurred (see attached updated list from August 2006 — present).

1.2 It was agreed that the incidents demonstrated a need to gather appropriate information in order to determine whether any improvements could be made to the requirements of the Technical Instructions to prevent such incidents from occurring. However, it was questioned whether the ICAO Technical Instructions could require reporting of incidents involving batteries that in some cases are in and of themselves not subject to the Technical Instructions.

1.3 During the meeting several views were expressed and the Secretariat kindly offered to coordinate a legal review with the ICAO Legal Bureau. After further review it has been noted that electric

storage batteries are only considered not subject to the Technical Instructions on the basis of compliance with the provisions in Special Provision A123 which states the following:

A123 This entry applies to Batteries, electric storage, not otherwise listed in Table 3-1. Examples of such batteries are: alkali-manganese, zinc-carbon, nickel-metal hydride and nickel-cadmium batteries. Any electrical battery or battery-powered device having the potential of dangerous evolution of heat that is not prepared so as to prevent a short circuit (e.g. in the case of batteries, by the effective insulation of exposed terminals; or, in the case of equipment, by disconnection of the battery and protection of exposed terminals) is forbidden from transport.

1.4 In addition, it has been noted that the following statement in Part 1;2.1 of the Technical Instructions should be considered:

Any substance which, as presented for transport, is liable to explode, dangerously react, produce a flame or dangerous evolution of heat or dangerous emission of toxic, corrosive or flammable gases or vapours under conditions normally encountered in transport must not be carried on aircraft under any circumstance.

1.5 In light of the prohibitions in Special Provision A123 against batteries which have the potential of dangerous evolution of heat or are inadequately protected against short-circuit, as well as the general prohibition in Part 1;2.1 against articles that can dangerously react or produce a flame or dangerous evolution of heat, it is clear that a battery which may otherwise be non-restricted but has caused an incident due to generation of a flame or heat is subject to the ICAO Technical Instructions and is in fact *prohibited* from carriage. As such, incidents involving flame or excessive heat generation should be reported. It is therefore proposed that specific language to Part 7;4.4 be added to clarify that all incidents involving batteries should be reported.

2. ACTION BY THE DGP-WG

2.1 The DGP-WG is invited to consider amending Part 7;4.4 by adding a note following 4.4 as follows:

4.4 REPORTING OF DANGEROUS GOODS ACCIDENTS AND INCIDENTS

An operator must report dangerous goods accidents and incidents to the appropriate authorities of the State of the Operator and the State in which the accident or incident occurred in accordance with the reporting requirements of those appropriate authorities.

Note.— This includes incidents involving dangerous goods which do not meet conditions prescribed to consider them not subject to some or all of the provisions of these Instructions, for example an incident involving short circuiting of a dry cell battery required to meet short circuit prevention conditions in a special provision of Part 3, Chapter 3.

APPENDIX

BATTERIES & BATTERY-POWERED DEVICES

Aviation Incidents Involving Smoke, Fire, Extreme Heat or Explosion

(Updated Mar. 21, 2007)

Note: These are recent cargo and baggage incidents that the FAA is aware of. This should not be considered as a complete listing of all such incidents. The incident summaries included are intended to be brief and objective. They do not represent all information the FAA has collected, nor do they include all investigative or enforcement actions taken.

DATE OF INCIDENT	TYPE OF BATTERY	DEVICE (if applicable)	AIRCRAFT TYPE (Passenger or Cargo)	INCIDENT SUMMARY
19-MAR-2007 Air carrier report	“CR123 Lithium” (reportedly, incident under investigation)	Camera	Passenger flight	<i>Preliminary report:</i> Incident occurred 1 ½ hours into a passenger flight from Buenos Aires to Miami. A battery fell/dropped out of a camera, striking a seat, causing smoke and fire. One passenger was injured (burns) along with seven flight attendants (smoke/fume inhalation). All refused medical treatment in Miami. Two aircraft seats were damaged and replaced.
9-MAR-2007 Air carrier reports	Lithium ion	Laptop computer and power converter.	Passenger flight	Passenger flight from Toronto to Dallas/Ft. Worth diverted to St. Louis after strong electrical burning smell in the cabin. Source was laptop being used by passenger while plugged in to aircraft power port via power converter. Power converter reportedly heated up. Aircraft power port and laptop reportedly in normal working condition afterwards.
1-MAR-2007 Australia CASA report	Twenty-four Surefire SF123A Lithium metal (non-rechargeable) batteries		Passenger flight	US mail package from EBay internet vendor containing the batteries was transported on a passenger flight from LAX to Sydney and caught fire at the Sydney Mail Gateway Facility.
10-FEB-2007 Air carrier	Under investigation.	Packed with professional audio/video	Passenger flight	While still climbing after takeoff from JFK, smoke began pouring from an

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reports	<p>Energizer lithium metal 9-volt, Energizer lithium metal AA, and IDX NP-L50S lithium ion batteries were all present.</p> <p>One Energizer lithium metal 9-volt was destroyed in the fire and seems most likely to be source of the fire.</p>	equipment		<p>overhead bin in the passenger cabin. Passengers alerted the flight attendants who responded. A flight attendant opened the bin and saw thick black smoke and flames in the rear of the bin. As the plane returned to the airport for an emergency landing flight attendants were able to put out the fire, discharging two Halon fire extinguishers. Water was applied to some cloth embers that continued to burn after the Halon was used.</p> <p>Cockpit crew smelled some light smoke in the cockpit and donned O2 masks for approx. 20 seconds until the smoke dissipated.</p> <p>Source of fire, bag with audio-video equip was secured in a lavatory. Aircraft landed and taxied to the gate. One passenger complained of chest pains and needed assistance in exiting the aircraft.</p> <p>The fire apparently was caused by loose batteries that were packed in a bag with other audio-video equipment. Still under investigation by NTSB and FAA.</p>
<p>15-Dec-2006</p> <p>Media reports and airport operations incident report.</p>	<p>One Lithium metal CR123A (probable)</p> <p><i>Passenger also purchased Lithium-ion rechargeable CR123A battery and charger for the device (incident is still under investigation)</i></p>	“Fresh Air Buddy” personal air filter	Passenger flight	<p>On a Houston-Portland passenger flight, a personal air filter, being worn on a strap around a passenger’s neck, started a fire in the cabin. The device started making hissing sounds and then emitted bright sparks/flash and a clap/bang sound. The passenger removed the device and it fell between two seat cushions where it continued to burn and smoke. Passengers dumped water on the device and then flight attendants put out the fire with a Halon fire extinguisher. The aircraft diverted to Colorado Springs. The passenger wearing the device suffered a superficial burn to his chest. Dozens of passengers were examined by EMT personnel,</p>

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				mainly for complaints related to inhalation of smoke and/or Halon fumes. Five or six passengers were taken to the hospital. The two fire-resistant aircraft seat cushions were replaced due to having holes burned in them.
14-Dec-2006 Report from UPS	Counterfeit CR123A, lithium metal	Flashlight "Superfire WF-501B"	Cargo flight	During a UPS cargo flight from Sydney, Australia to Guangzhou, China, at 38,000 ft., the crew heard a loud bang. A crewmember found that his flashlight in a bag next to his seat was warm and had a strong odor coming from it. The flashlight was opened and there was soot/residue from burning. One of the two batteries (now determined to be counterfeit) was damaged. Earlier the crewmember had dropped the flashlight about 6 inches into his bag and heard a thump.
25-Nov-2006 FAA agent summary	Nonspillable lead acid, 12-volt, VRLA industrial (Marathon M12V155FTX)		Cargo flight	A pallet of eight batteries was being shipped from Canada to Brazil. At the FedEx Memphis sort center, one of the batteries fell from the wooden skid and cracked open its housing, causing some burning/scorching.
11-Nov-2006 Notification by US Customs and CPSC FAA case # 2007WP7000 45	Lithium ion cell phone batteries		Cargo flight	After being shipped by air from China to the US, some batteries were selected for inspection by US Customs. While on the desk of an import specialist, the battery started emitting sparking flames and smoke.
15-Sep-2006 FAA Case # 2006GL70042 7	Silver oxide button cells, various sizes		Cargo flight	During off-loading at their Plymouth, MN facility, DHL/Airborne personnel discovered two boxes that were warm to the touch. The boxes were opened and found to contain hundreds and hundreds of button cell batteries loosely packed

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				together in a plastic bag liner. Batteries were being shipped by a small business battery recycler that stated they thought all batteries were discharged. Tests showed many still had positive voltage.
15-Sep-2006 United Airlines report	Lithium-ion laptop battery	IBM Laptop computer	Passenger flight	Approximately 15 minutes prior to departure of a LAX-LHR transatlantic flight, the laptop computer of a passenger began to smoke. The relief pilot and purser assisted the passenger in removing the laptop from the airplane. The laptop was placed on the floor of the gate area where it continued to smoke from the battery pack area and a small flame appeared. A customer service representative discharged a fire extinguisher on the fire. The battery pack continued to smoke for an additional couple minutes with white smoke and a strong odor. The Fire Department responded and discarded the burnt battery pack. The passenger stated the laptop was an IBM that belonged to his company and had been in his possession the entire time, having original parts and never having been serviced. The passenger was reportedly not using aircraft power to operate the computer. The airplane remained in service and departed on time without the incident passenger.