



DANGEROUS GOODS PANEL (DGP) WORKING GROUP OF THE WHOLE ON LITHIUM BATTERIES

FIRST MEETING

Montréal, 6 to 10 February 2012

Agenda Item 3: Lithium battery-related incidents and accidents

UPDATE LITHIUM BATTERY INCIDENT IN CANADA

(Presented by Micheline Paquette)

SUMMARY

This paper provides an update on the lithium battery incident that occurred in Toronto, Canada on 29 October 2011.

1. INTRODUCTION

1.1 An incident involving packages of UN 3481, **Lithium ion batteries contained in equipment**, occurred on Saturday 29 October 2011 at Toronto's Pearson airport. A ground handling agent, on the ramp, observed smoke being emitted from a pallet containing electric bicycle batteries. This consignment originated in Canada and was destined for Austria.

1.2 The shipper of the batteries produces a retrofit kit to allow the conversion of a regular bicycle into an electric one. This kit consists of a motor, a lithium manganese rechargeable battery pack and a console. Only battery packs were shipped on 29 October. A battery pack consists of a battery and a circuit board placed in a rigid plastic casing. The battery packs were to be loaded on a 767 passenger aircraft.

1.3 Each battery consists of fifty-two cells. The cells were manufactured in Korea; the batteries were assembled in China. The cells and batteries were tested in accordance with the UN *Manual of Tests and Criteria*, Part III, section 38.3. The batteries were shipped to Canada under UN 3480, **Lithium ion batteries**. The battery has a watt-hour rating of 411.8W/h (capacity 8.8Ah and voltage 46.8V)

1.4 The shipper, based in Ontario Canada, assembled the battery into the battery pack. The batteries were prepared for transport using Section I of Packing Instruction 967 of the Technical

Instructions. The shipper offered for transport 191 packages contained in two overpacks. Each package weighed 3.5 kg Gross.

1.5 The cargo was accepted by one company on behalf of the air operator. Cargo handlers placed the two overpacks containing 191 packages of UN 3481, **Lithium ion batteries contained in equipment**, and five packages of UN 0012, **Cartridges small arms** (4.6 kg each) on the same ULD (aircraft pallet).

1.6 The ground handling was done by one company on behalf of the air operator. One ground handler noticed smoke emitting from the ULD on the ramp prior to loading it in the aircraft. Fire services were called to extinguish the fire. Their initial report suggested that there were two sources of fire.

1.7 This incident did not meet the definition of an “aviation occurrence” because it was not associated with the operation of an aircraft. Thus, neither Civil Aviation Contingency Operations nor the Transportation Safety Board (TSB) was notified as it did not constitute a reportable aviation occurrence. However, a report had been made to CANUTEC (Canadian Transport Emergency Centre of the Department of Transport) as are all dangerous accidents and incidents in Canada.

1.8 Transport Canada Civil Aviation proceeded with an investigation and approached the Transportation Safety Board to investigate the cause of the fire. Batteries were sent to the TSB laboratories for analysis.

1.9 Transport Canada Civil Aviation conducted a thorough investigation and found the consignment to meet all the requirements of the Technical Instructions. The shipper had classified, marked, labelled, documented and packaged (using Packing Instruction 967) the consignment in accordance with the Technical Instructions and respected internal company procedures on packaging. Shipper personnel were trained.

1.10 The Transportation Safety Board conducted a preliminary examination but a detailed analysis is to come. The Transportation Safety Board has no immediate concerns with how the battery was assembled, the design of the equipment (circuit board and battery inside the plastic casing) and how the packages were stacked inside the overpack. So far, it has observed that:

- a) the origin of the fire was most likely from within the package;
- b) there was only one source of ignition in the ULD;
- c) the initiating package was badly damaged; and
- d) there is no indication that there was damage to the packages or overpack during the transportation process;

The cause of the initiating event is unknown at this time. The Transportation Safety Board will determine the root cause of the incident, which could be either: the cells, the battery or the circuitry.

1.11 The shipper has modified their internal procedures since the incident by:

- a) reducing the state of charge of the battery between 30 and 40%;
- b) charging the batteries once, waiting three days and charging again; and

c) shipping by cargo aircraft only.

1.12 If the DGP is interested, the Transportation Safety Board could present their finding at the next working group of the whole in October 2012.

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