



Australian Government

Australian Transport Safety Bureau

Cargo hold smoke event involving a Boeing 737, DQ-FJH

Melbourne Airport, Victoria, 26 April 2014

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Addendum

Page	Change	Date

Cargo hold smoke event involving a Boeing 737, DQ-FJH

What happened

On 26 April 2014, a passenger checked in four bags for a Fiji Airways flight from Melbourne, Victoria, to Nadi, Fiji, on a Boeing 737 aircraft, registered DQ-FJH. The passenger was a certified remotely piloted aircraft (RPA) operator in Australia. The passenger stated during check-in that there were no batteries in the checked bags, but declared 8 lithium batteries being carried as hand luggage. The bags were screened in accordance with the Aviation Transport Security Regulations.

At about 2230 Eastern Standard Time (EST), the aircraft was at Gate D8 at Melbourne Airport and the passengers' bags were being loaded. The cabin crew members were on board preparing the aircraft prior to boarding of passengers, and the first officer was in the cockpit conducting pre-flight checks. The captain was on the tarmac, conducting an external inspection of the aircraft. A ground engineer observed smoke emanating from the aft cargo hold, alerted the captain and notified the aerodrome rescue and firefighting (ARFF) service. The captain saw white heavy smoke billowing from the hold and immediately called the first officer to advise him. The first officer observed that the aft cargo fire warning light was illuminated. The captain directed the first officer to activate the aft cargo hold fire suppression system, shut down the auxiliary power unit and order an evacuation of the aircraft. The first officer advised air traffic control and declared 'Mayday'.¹

The ARFF arrived and a smouldering hard-plastic case was removed to a safe location and cooled with a fine water spray. The passenger who had checked in the case was located and was asked whether any batteries were in it, to which the passenger responded there were none. The ARFF and Australian Federal Police inspected all four of the bags checked in by the passenger and found 19 batteries intact and additional 6-8 batteries that had been destroyed by fire.

An initial investigation revealed that several lithium-ion polymer batteries and an RPA controller were contained in the case. An electrical short circuit involving the batteries resulted in the initiation of a fire, destroying the contents and damaging the case (Figures 1, 2 and 3). An RPA controller containing other, similar, lithium-ion polymer batteries was found in one of the passenger's other checked-in bags. The fire-damaged case had been screened through the oversized luggage point at Melbourne Airport.

¹ Mayday is an internationally recognised radio call for urgent assistance.

Figure 1: Fire-damaged bag and contents



Source: CASA

Figure 2: Batteries found in the case



Source: CASA

Figure 3: Battery balancers



Source: CASA

Fiji Airways investigation

An analysis conducted by Fiji Airways found that the post-incident images indicated a Lithium-ion Polymer battery fire involving high capacity – high discharge batteries. The battery balancers (shown in Figure 3), are used for charging heavy duty batteries.

Safety Action

As a result of this occurrence, Fiji Airways has issued an Airport Operations Standing Order: *Lithium Metal & Lithium Ion Cells Batteries* advising check-in staff to ask every passenger whether their baggage contains lithium batteries and to check batteries are carried in accordance with regulations. Any passenger carrying undeclared lithium batteries that are discovered prior to departure will be offloaded and refused carriage.

Safety message

This incident highlights the hazards associated with transporting lithium-ion batteries. Batteries operate via a controlled chemical reaction that generates current and transmits power through the battery terminals. This process generates heat. Rapid increase in temperature and pressure in the battery cells may result in fire. Information regarding carriage of batteries and battery-powered equipment is provided by the *International Civil Aviation Organization (ICAO) Technical Instructions for the Safe Transport of Dangerous Goods by Air, Part 8*, www.icao.int/safety/DangerousGoods/Pages/technical-instructions.aspx.

It is important for safety that all batteries be individually protected so as to prevent short circuits. This can be achieved by placement of the batteries in the original retail packaging or by otherwise insulating the terminals, wires or fittings, e.g. by taping over exposed terminals with an electrical insulating tape or placing each battery in a separate plastic bag or protective pouch. When batteries are contained in personal electronic devices, measures must be taken to prevent unintentional activation.

Information regarding carriage of batteries and battery-powered equipment may be requested from CASA by e-mail to: DG@casa.gov.au or from the CASA website:

www.casa.gov.au/SCRIPTS/NC.DLL?WCMS:STANDARD::pc=PC_100484

www.casa.gov.au/dg

General details

Occurrence details

Date and time:	26 April 2014 – 2220 EST	
Occurrence category:	Serious incident	
Primary occurrence type:	Fumes, Smoke, Fire - Smoke	
Location:	Melbourne Airport, Victoria	
	Latitude: 37° 40.40' S	Longitude: 144° 50.60' E

Aircraft details

Manufacturer and model:	The Boeing Company 737-8X2	
Registration:	DQ-FJH	
Operator:	Fiji Airways	
Serial number:	29969	
Type of operation:	Air transport high capacity – passenger	
Persons on board:	Crew – 5	Passengers – Nil
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Nil	

About the ATSB

The Australian Transport Safety Bureau (ATSB) is an independent Commonwealth Government statutory agency. The ATSB is governed by a Commission and is entirely separate from transport regulators, policy makers and service providers. The ATSB's function is to improve safety and public confidence in the aviation, marine and rail modes of transport through excellence in: independent investigation of transport accidents and other safety occurrences; safety data recording, analysis and research; and fostering safety awareness, knowledge and action.

The ATSB is responsible for investigating accidents and other transport safety matters involving civil aviation, marine and rail operations in Australia that fall within Commonwealth jurisdiction, as

well as participating in overseas investigations involving Australian registered aircraft and ships. A primary concern is the safety of commercial transport, with particular regard to fare-paying passenger operations.

The ATSB performs its functions in accordance with the provisions of the *Transport Safety Investigation Act 2003* and Regulations and, where applicable, relevant international agreements.

The object of a safety investigation is to identify and reduce safety-related risk. ATSB investigations determine and communicate the safety factors related to the transport safety matter being investigated.

It is not a function of the ATSB to apportion blame or determine liability. At the same time, an investigation report must include factual material of sufficient weight to support the analysis and findings. At all times the ATSB endeavours to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why, in a fair and unbiased manner.

About this report

Decisions regarding whether to conduct an investigation, and the scope of an investigation, are based on many factors, including the level of safety benefit likely to be obtained from an investigation. For this occurrence, a limited-scope, fact-gathering investigation was conducted in order to produce a short summary report, and allow for greater industry awareness of potential safety issues and possible safety actions.