
Struck by baggage belt vehicle, Boeing 737-8AS, EI-DAP, November 26, 2005

Micro-summary: This Boeing 737 was struck by a baggage belt vehicle while parked.

Event Date: 2005-11-26 at 1020 UTC

Investigative Body: Aircraft Accident Investigation Board (AAIB), United Kingdom

Investigative Body's Web Site: <http://www.aaib.dft.gov.uk/>

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INCIDENT

Aircraft Type and Registration:	Boeing 737-8AS, EI-DAP	
No & Type of Engines:	2 CFM 56-7B24 turbofan engines	
Year of Manufacture:	2003	
Date & Time (UTC):	26 November 2005 at 1020 hrs	
Location:	Stand 4 at Glasgow Prestwick Airport	
Type of Flight:	Public Transport (Passenger)	
Persons on Board:	Crew - 6	Passengers - 181
Injuries:	Crew - None	Passengers - None
Nature of Damage:	Minor dent in aircraft fuselage and broken radar antenna	
Commander's Licence:	Airline Transport Pilot's Licence	
Commander's Age:	39 years	
Commander's Flying Experience:	10,200 hours (of which 5,000 were on type) Last 90 days - 282 hours Last 28 days - 92 hours	
Information Source:	Report submitted by Airfield Operations Manager and Aircraft Accident Report Form submitted by the pilot	

Synopsis

The aircraft had been parked on Stand 4 and the flight crew had started the normal aircraft shutdown checks. A baggage belt vehicle was being manoeuvred towards the front hold of the aircraft and subsequently struck the fuselage of the aircraft. No one was injured as a result of the incident. The report contains one AAIB Safety Recommendation.

Incident description

The aircraft had been parked on Stand 4 and the flight crew had started their normal aircraft shutdown checks. The ground power was connected, the front hold door was opened and a baggage belt vehicle was being

manoeuvred towards the front hold. As the vehicle approached the aircraft the driver put his foot on the brake, however the pedal went all the way to the floor without slowing the vehicle. The driver tried, but failed, to grasp the hand brake and he reacted by steering the vehicle to the right to avoid the open cargo hold. The conveyer belt, which overhangs the front of the vehicle, struck the aircraft bringing the vehicle to a stop (see Figure 1).

The captain felt the collision and later reported that he was not immediately aware how significant the incident was since he did not receive prompt communication



Figure 1

Photograph taken shortly after the collision showing the baggage belt vehicle and the aircraft fuselage

from the ground crew. The captain then opened the flight deck window and was informed by the ground crew that the baggage belt had struck the fuselage. He decided to disembark the passengers using the rear stairs. No one was injured as a result of the incident or the disembarkation.

Emergency response

Shortly after the collision the ground crew contacted their line manager who arrived promptly and they subsequently telephoned the Motor Transport department. However, it was not until 1040 hrs, around 20 minutes after the collision, that a ground operator, who as part of his job had a mobile patrol function, contacted ATC and made them aware of the situation. An 'Aircraft Ground Incident' was called and the fire services arrived at the scene shortly afterwards.

Airfield investigation

The Airfield Operations Manager, who undertook a comprehensive investigation, including interviews with several key personnel and an independent inspection of the vehicle, provided the AAIB with his report.

Baggage belt vehicle

The baggage belt vehicle was an Avia Lift model APL 900 Mk1 built in 1982. The vehicle was self propelled and had a cab on the left side and a conveyer belt, which overhung the front of the vehicle, on the right side. The footbrake operated a non-assisted single circuit hydraulic system to drum brakes fitted to the front and rear. The parking brake was hand operated, and this could be used in an emergency should the footbrake fail. The vehicle had automatic transmission with a PARK setting.

Ground vehicle maintenance

Service records indicated that in June 2005 and in September 2004 the vehicle had been given a six month service. In both cases a schedule with 63 maintenance actions was used. The vehicle was maintained by the airport authority and, as such, the inspections were not undertaken by an independent body, however the forms had signatures of both a maintainer and a supervisor. The inspections were in line with the 30 point safety check recommended in CAP 642¹. Whilst CAP 642 does not specify how regular the inspections should be, it does state that the frequency of inspections, maintenance and servicing should be appropriate to the type and age of the vehicle used and should be in accordance with the manufacturer's instructions. CAP 642 is not mandatory, but UK airport operators have adopted Safety Management Systems (SMS) in accordance with CAP 168 'Licencing of Aerodromes' and CAP 168 makes specific reference to CAP 642 in this regard. The CAA expects airport operators, in the absence of any accepted alternative, to adopt the guidance provided in CAP 642 as part of their SMS.

Footnote

¹ CAP 642 *Airside Safety Management* – the CAA document that provides guidance to aircraft and airport operators on safe operating practices for airside activities.

The front section of the park brake cable had been replaced in June 2005 and records showed that parts of the brake pipe system had been replaced in September 2004 and November 2004. It was not possible to determine which parts of the brake pipes had been replaced.

Vehicle inspection

The vehicle was inspected after the accident by an appropriate independent organisation and the key findings are described below.

Footbrake system

It was possible to push the pedal through the full length of travel without resistance. The hydraulic pipe leading to the brake cylinder on the front offside wheel was found fractured which had caused immediate loss of brake fluid pressure and it was concluded that the driver would have had no prior warning of the failure. The independent inspection did not attempt to determine why the pipe had fractured.

Parking brake

The front section of the parking brake cable, which had been replaced in June 2005, was found to be seized. There was therefore no parking or emergency braking available, a defect that would have been noticeable, for example during a daily check. The parking brake system downstream of the seized cable was found to operate satisfactorily.

Use of PARK with automatic transmission

The vehicle's automatic transmission had a PARK setting that could have been used in preference to the parking brake. Regular use of the PARK setting could have meant less frequent use of the parking brake and this could have contributed to the cable seizure and a reduced probability of detecting a fault with the parking brake.

Analysis

The incident was caused by a failure in the hydraulic pipe for the brakes. The vehicle had been serviced twice in the 14 months prior to the incident and on two occasions (12 and 14 months prior to the incident) parts of the brake pipe system had been replaced. However, the vehicle became unsafe within six months of its last service. The impending brake pipe failure and the defective parking brake might have been detected had a daily check, or a quarterly service, together with an effective defect reporting system been used.

Airfield management safety actions

As a result of the mechanical failure of the vehicle and the delay in declaring an Aircraft Ground Incident, the airfield management recommended several safety actions:

- a) A full review of: the ground vehicle fleet; the defect reporting system; the maintenance reporting process; the content and the frequency of the servicing schedule and the manning levels in the Motor Transport department.
- b) A review of a range of activities to improve the awareness of prompt and effective use of emergency procedures. This includes the immediate reporting by ground handlers to the aircraft captain of any ground incident.

In view of these safety actions the AAIB is making only one Safety Recommendation.

Safety Recommendation 2006-060

It is recommended that the Civil Aviation Authority should remind airport operators that their Safety Management Systems should ensure that safe standards of maintenance and use are applied to all vehicles and mobile ground equipment used in the proximity of aircraft.