

INCIDENT

Aircraft Type and Registration:	Boeing 737-4Y0, G-UKLA	
No & Type of Engines:	2 CFM 56-3-C1 turbofan engines	
Year of Manufacture:	1988	
Date & Time (UTC):	24 September 1994 at 2301 hrs	
Location:	London Gatwick Airport	
Type of Flight:	Public Transport	
Persons on Board:	Crew - 7	Passengers - 110 + 1 infant
Injuries:	Crew - None	Passengers - None
Nature of Damage:	Separation of right outer mainwheel tyre tread, loss of lower right main landing gear door, small puncture of leading edge skin of right horizontal stabiliser and damage to inboard right flap and flap track fairing	
Commander's Licence:	Airline Transport Pilot's Licence	
Commander's Age:	Not relevant	
Commander's Flying Experience:	Not relevant	
Information Source:	AAIB Field Investigation carried out in conjunction with tyre manufacturer	

The aircraft had arrived from Salzburg and, one hour later when the turnaround was complete, the passengers were boarded for a scheduled flight to Alicante. The aircraft did not display any abnormal characteristics either whilst landing and taxiing in from the Salzburg flight or whilst taxiing out for the flight to Alicante. The aircraft took off uneventfully at 2300 hrs and landed at Alicante at 0110 hrs where, again, the crew experienced no difficulty in taxiing the aircraft.

During the walkaround inspection on the ground, the crew discovered that slight airframe damage was present and the right outer (No 4) mainwheel tyre was devoid of tread. Although the pressure in the damaged tyre was not measured, it is understood that it had not deflated. The other tyre on that leg was correctly inflated.

At 2327 hrs, the BAA Operations Duty Office received notification from ATC that the crew of a departing aircraft had seen bird debris on the runway. A runway inspection was carried out, during which tyre debris was found. The runway was then closed to allow a more detailed examination to be carried out, and both rubber and metallic debris were found in Blocks 5 and 6 of Runway 08R. The runway was re-opened at 0004 hrs on Sunday 25 September.

The BAA requested a locally based airline to identify the debris and they were informed that it belonged to a Boeing 737-200 (NB: This excluded the -400 series as the metallic items of the -200 series are different from corresponding parts on the Boeing 737-300, -400 and -500 series). All -200 series Boeing 737 aircraft on the ground were examined without any damage being found. Two Boeing 737-200 aircraft had departed in the previous 1 hour and 15 minutes, one of which was the aircraft which first reported sighting debris. Arrangements were made to notify the operator of these aircraft that tyre and associated debris had been found on the runway.

An engineer from the maintenance company of the airline travelled out to Alicante to assess the damage to G-UKLA. He arranged for the replacement of both wheels and tyres on the right main landing gear and carried out temporary repairs to the damaged areas, confirming that the aircraft could be flown with the lower of the two main landing gear doors on either leg absent.

The aircraft was then ferried, without passengers, to the maintenance company's main base at Stansted, UK, where permanent repairs were effected and the aircraft was returned to service.

The debris found at Gatwick was transported to Stansted and examined in conjunction with the carcass of No 4 tyre of G-UKLA. It was confirmed that the rubber was all tread material from the tyre and the other major item was a badly damaged lower right main landing gear door from the aircraft. (The Boeing 737-200 type, in contrast, has no door in this position).

Examination of the tyre and the tread debris at Stansted indicated that complete tread separation had occurred, the wheel having subsequently rolled for a considerable distance on the remaining carcass. The items recovered included more than 80% of the tread material.

The tread fragments were loosely taped onto the carcass in the correct positions to visualise the separation sequence. It was found that a deep gouge in the tread had been inflicted by a hard object, without apparently affecting the integrity of the tyre. Further around the circumference, however, another cut between ribs of the tread had extended to such a depth that cut ends of the tyre chords were visible in the tread cut.

A small area of the face beneath this cut was discoloured, suggesting that air had reached the interface between the tread and the carcass via the cut, and had become heated in this area during operation of the tyre. Chords on the tread fragment, adjacent to the cut area, had the appearance of having been abraded by relative movement of the tread and the carcass. This movement is thought to have occurred after the tread had ceased to be bonded locally to the carcass. This loss of bonding was probably the result of progressive heating, generated by operating friction between the unattached sections of tread and carcass.

The remainder of the tread material appeared to have separated from the carcass in fairly large sections as a result of centrifugal force. There was no indication that any pre-existing defects in the tyre caused the tread loss nor any evidence that the tyre had operated whilst under-inflated.