

AAIB Bulletin No: 11/93

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Category: 1.1

Aircraft Type and Registration:	BAe 146-300, G-JEAM	
No & Type of Engines:	4 ALF502 turbofan engines	
Year of Manufacture:	1989	
Date & Time (UTC):	6 June 1993 at 1058 hrs	
Location:	London Gatwick Airport	
Type of Flight:	Scheduled Passenger	
Persons on Board:	Crew - 5	Passengers - 98
Injuries:	Crew - None	Passengers - None
Nature of Damage:	Right main landing gear wheels and tyres destroyed, minor damage to hydraulic system, wiring and landing gear door	
Commander's Licence:	Airline Transport Pilot's Licence	
Commander's Age:	53 years	
Commander's Flying Experience:	11,300 hours (of which 4,600 were on type) Last 90 days - 147 hours Last 28 days - 60 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot, examination and report on the tyre debris	

The aircraft turned onto Runway 08R at holding point 'D' for a rolling take off. The crew noticed a mild vibration which increased in severity as speed increased. At about 85 kt the take off was abandoned using only mild braking as the Captain suspected a wheel fault, the aircraft vacating the runway at rapid turnoff 'C'. After confirming with the Fire Service that two tyres on the right main landing gear had failed, the captain elected to disembark the passengers normally using steps as there appeared to be no further danger and a number of them were elderly.

The very badly damaged remains of the two tyres were collected from the runway without noting the particular areas from which the debris was recovered. Later, from recollections of the personnel involved, it appeared that a large piece of tread was found on the runway a few hundred metres from where the aircraft had turned on, whilst the remainder of the debris (including another large piece of tread) had been found in a trail over a few hundred metres back from where it had turned off. This would imply that one tyre had become distressed during the taxi for take off, failing completely together with its axle-mate later in the take-off roll.

Both tyre carcasses were very badly shredded such that it was not immediately obvious who their original manufacturer had been. However, one large portion of tread bore the markings 'Goodyear Thailand Retread' and contact was made with the UK branch of Goodyear for them to examine the remains.

The representative advised that, because of the extreme damage to both tyres, they should be referred to Goodyear's European Technical Centre for further examination. He did, however, point out that the large piece of tread mentioned above also bore the markings '12.50-16/39 x13 16 PR 225 mph'. Whilst this tyre was the correct size for the BAe 146, the 16 ply rating was insufficient for the aircraft and, in fact, it appeared to be a Boeing 707 nosewheel tyre.

After examination by the Goodyear Technical Centre and liaison with their Thailand retread factory, the following facts were established:

- 1 The tyre carcasses appeared to be of Dunlop manufacture but at least one had been retreaded by Goodyear Thailand. It was not possible to physically confirm the ply rating.
- 2 From examination of the remains of the tyre beads, both appeared to be of the same type, although one was marked as '16 PR 225 mph' and the other as '22 PR 190 mph'. Confirmation was being sought from Thailand that the tyre marked 16 PR may actually have been of the correct ply rating but incorrectly marked at the last retread. For the sake of brevity, however, they will henceforth be referred-to as the 16 PR tyre and the 22 PR tyre.
- 3 The 22 PR tyre had failed with the characteristics of a major impact in the tread area. The 16 PR tyre had failed with the characteristics of overdeflection and overheating, and showed signs of radial scratching on the shoulder suggesting that it had been subjected to manoeuvring whilst in this overloaded state.

Based on the above it was considered that the evidence pointed to an initial failure of the 22 PR tyre due to an impact, either before or during taxi, prior to the take-off roll. This led to shedding of a large portion of the tread at the start of the take-off roll and the overload damage observed on the mating 16 PR tyre, which eventually resulted in complete failure of both tyres as aircraft speed increased.

The aircraft was one of a number which had been leased to a Thai airline but were recovered to the UK when the lease ended. The wheels and tyres were evidently still those which were fitted when the aircraft returned from Thailand and the organisation responsible for maintenance of these aircraft has advised that they will in future be replacing remoulded tyres before delivery to another customer.