INCIDENT

Aircraft Type and Registration:	BAe HS125 Series 700, EI-WJN
No & Type of Engines:	2 Garrett/Honeywell TFE-731-3R1H turbofan engines
Year of Manufacture:	1979
Date & Time (UTC):	20 September 2005 at 1006 hrs
Location:	Prestwick Airport, Ayrshire
Type of Flight:	Public Transport (Passenger)
Persons on Board:	Crew - 2 Passengers - 4
Injuries:	Crew - None Passengers - None
Nature of Damage:	Nos 1 and 2 tyres destroyed. Further damage to No 1 wheel and door linkage
Commander's Licence:	Airline Transport Pilot's Licence
Commander's Age:	54 years
Commander's Flying Experience:	17,400 hours (of which 3,307 were on type) Last 90 days - 72 hours Last 28 days - 19 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot and further information from ATC and Airport Fire Service

Synopsis

As the aircraft touched down on Runway 31 at Prestwick both tyres of the left main landing gear burst. The pilot maintained directional control, turned the aircraft off the runway and brought it to a stop on a taxiway. Examination of the wheels showed that the damage to the tyre of the inboard wheel was consistent with it not having spun up at touchdown and that the outer rim of the outer wheel had acted as a rolling surface following the bursting of that tyre. Examination of the brake units revealed some discrepancies, but none that would have resulted in locking of the brakes or explained the failure of the tyres at or near touch-down.

History of the flight

The aircraft was landing on Runway 31 at Prestwick after a flight from Shannon Airport. As the aircraft touched down the crew noted that it pulled sharply to the left and that the application of right rudder pedal and right brake were needed to keep the aircraft straight. The flight crew reported to ATC that they believed that they had burst tyres and were able to keep the aircraft on the runway. The aircraft was turned off the runway under its own power, at the last high-speed turnoff, and came to a halt on Taxiway Kilo. The Airport Fire Service responded promptly with three vehicles and it was quickly established that there was no fire and that damage was limited to the left landing gear.

ATC immediately closed Runway 31 after the incident because of the likelihood of there being debris on the surface. At the time the wind was reported as being from 230º at 12 kt and a senior manager of the operating company, who was travelling as a passenger, reported the touch-down had felt normal.

Examination

Inspection of the landing gear showed a different pattern of damage between wheels Nos 1 and 2, on the left side. Wheels Nos 3 and 4, on the right side of the aircraft, were undamaged.

All that remained of the tyre on wheel No 1 were the two beads and some shredded portions of the tyre sidewalls which had remained attached to the beads. The even pattern of damage to the wheel rim showed that, following the tyre burst, this wheel had been rotating for at least part of the time that the aircraft rolled along and clear of the runway and this damage was not inconsistent with a tyre burst at, or very shortly after, touch-down. By contrast, there was no visible damage to wheel No 2 and its tyre was intact over some 180º of its circumference. The remaining circumference of the tyre showed two very large and distinct areas of 'chamfer' and local heating, where the tyre had slid along the runway surface without rotation. (See Figure 1.)

The only other damage to the aircraft was secondary, the failure of the linkage retaining the landing gear door. This appeared to have occurred because the No 1 tyre burst.

Figure 1

View looking aft and inboard on the Nos 1 & 2 tyres after landing

The brake units were returned to the manufacturer, for test and examination. This showed a number of minor technical discrepancies, none of which would have resulted in locking of the brakes or explained the failure of the tyres at or near touch-down.

In normal operation, this aircraft had tended to have a higher rate of wear of the brakes on the left side as compared to those on the right. On the day before this flight, the left brakes had been changed and the braking system tested and found satisfactory during a taxiing test.

Discussion

The landing was conducted in good weather conditions, with only a moderate crosswind; touchdown appeared to have been at a normal descent rate and aircraft attitude. One explanation of the difference in the damage to the two tyres could be that one had a lower inflation pressure, although discussion with the operator indicated that this was unlikely. More probably, the slight angle of bank to the left after the touchdown and tyre burst had resulted in the outboard rim of the No 1 wheel becoming the weight-bearing rolling surface for the left landing gear which had resulted in the No 1 tyre experiencing a different post-burst loading.

The damage to the No 2 tyre was consistent with that to be expected if the wheel had failed to spin up at touchdown. This could occur if some brake pressure were present at the wheel when the wheel touched down which, in turn, would annul the anti-skid function of the braking system, leaving the brake 'locked on'. Since, during the investigation, no significant deficiencies were found in the braking system of the aircraft, it was considered likely that some braking was being applied, inadvertently, on the left side at touchdown.