



NO 93-006

BRITTEN-NORMAN BN-2A

ZK-FVD

GREAT BARRIER AERODROME

6 APRIL 1993

A B S T R A C T

On approach to Great Barrier Aerodrome, the aircraft undershot the runway and contacted the lip of the drainage ditch at the runway's end. The left undercarriage leg was torn off, and the aircraft slid to a halt on its belly and right undercarriage leg. None of the six occupants was injured.

TRANSPORT ACCIDENT INVESTIGATION COMMISSION

AIRCRAFT ACCIDENT REPORT NO 93 - 006

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| Aircraft Type, Serial Number and Registration: | Britten-Norman BN-2A Islander, 316, ZK-FVD |
| Number and Type of Engines: | 2 Lycoming O-540-E4C5 |
| Year of Manufacture: | 1973 |
| Date and Time: | 6 April 1993, 1547 hours * |
| Location: | Great Barrier Aerodrome Latitude: 36°14'S Longitude: 175°28'E |
| Type of Flight: | Air Transport – Scheduled Passenger Service |
| Persons on Board: | Crew: 1 Passengers: 5 |
| Injuries: | Crew: 1 Nil Passengers: 5 Nil |
| Nature of Damage: | Substantial |
| Pilot in Command's Licence: | Commercial Pilot Licence (Aeroplane) |
| Pilot in Command's Age: | 33 |
| Pilot in Command's Total Flying Experience: | 930 hours total 290 hours on type |
| Information Sources: | Transport Accident Investigation Commission field investigation |
| Investigator in Charge: | Mr A J Buckingham |

* All times in this Report are NZST (UTC + 12 hours)

1. NARRATIVE

1.1 ZK-FVD, operated by Great Barrier Airlines Ltd, was being flown on a scheduled passenger service (flight GB1) between Auckland International Airport and Great Barrier (Claris) Aerodrome.

1.2 Prior to descent, the pilot checked the brakes, and found that the left brake pedal was “soft”; pumping the brake pedal did not restore it to normal. No abnormality had been noticed during taxiing at Auckland. The pilot briefly considered the possibility of returning to Auckland (where the problem could have been rectified), but decided that this was unnecessary and that a landing could be accomplished safely at Great Barrier. However, the possibility of a rejected take-off on departure from Great Barrier, requiring serviceable brakes, was not considered.

1.3 The runways available at Great Barrier were 06/24, with a total length of 620 m, and 10/28, with a total length of 930 m. On runways 06 and 10 there were displaced landing thresholds of 22 m and 60 m respectively.

1.4 Arriving in the circuit area at Great Barrier, the pilot carried out a standard circuit joining procedure, and observing the wind to be blowing from about 190° magnetic at less than 10 knots, elected to use runway 10.

1.5 The pilot stated that she chose runway 10 because the location of the aircraft parking area in relation to the runway would require only right-hand turns during taxiing, minimising the need for use of the left brake. However, ZK-FVD was equipped with nosewheel steering and this, combined with the use of asymmetric power during ground manoeuvring, should have allowed the pilot to taxi without difficulty.

1.6 The pilot made a normal approach, but was aiming to utilise the maximum runway length, including that prior to the 60 m displaced landing threshold on this runway. As she flared the aircraft for touchdown, she felt a solid bump, “like a heavy landing”.

1.7 Both pairs of main undercarriage wheels had contacted the lip of the drainage ditch at the runway threshold, tearing the left leg from its attachment points and damaging the right one substantially.

1.8 As the aircraft lost flying speed, it settled onto its belly and left wingtip, and began to veer towards the left side of the strip. The pilot attempted to maintain directional control using right rudder and brake, but without success. The aircraft came to rest in the manuka scrub beside the strip, 260 m from the point of first ground contact.

1.9 The pilot verified that the passengers were unharmed, and commenced disembarking them, by which time several bystanders had arrived and were able to assist.

1.10 Examination of the scene next day showed that the aircraft had made contact with the drainage ditch in a wings-level attitude about 4 m left of the strip centreline. The wheel marks on the side of the ditch extended 300 mm below the level of the strip surface. It was noted that the undershoot area on the approach side of the ditch was generally about 600 mm lower than strip level.

1.11 The aircraft had suffered damage consisting of upward deformation in the wing area above both undercarriage attachments, a large dent in the left leading edge of the tailplane where the left undercarriage leg had struck it, and an assortment of minor skin wrinkles. The right undercarriage leg had not separated from the airframe despite dislocation due to impact, and had prevented the right propeller from striking the ground. Ground strike marks made by the left propeller commenced at 95 m from the ditch. Slight rearward bending of the propeller tips confirmed that the left engine was not producing significant power at the time.

1.12 Inspection of the left brake system found no obvious pre-existing leaks or other defect. The brake lines had parted at impact, and it was not possible to determine if the problem had been caused by an air lock. The brake master cylinder was full.

1.13 The pilot stated that, apart from the suspect brake, the aircraft had been operating normally up to the time of the accident. The all-up weight and centre of gravity were within limits, and the fuel tanks contained a total of 240 litres of fuel, equally distributed between the two main tanks.

2. FINDINGS

2.1 The pilot was appropriately licensed and experienced for the flight.

2.2 With the exception of a suspected brake problem, the aircraft was airworthy and operating normally prior to the accident.

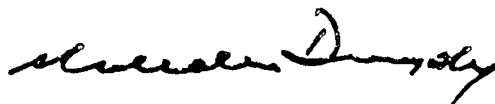
2.3 In attempting to utilise the maximum landing distance, the pilot undershot the runway, and the aircraft struck the lip of the perimeter drain with both undercarriage legs.

2.4 The pilot may have been distracted by consideration of the effects of a brake problem.

2.5 The cause of the brake problem was not established.

2.6 The pilot's decision to land at Great Barrier Aerodrome should not, of itself, have jeopardised the safety of the passengers unnecessarily.

2.7 It would have been more appropriate for the pilot to have returned to an aerodrome with a maintenance facility than to continue the flight to a remote location with no such facility.



9 August 1993

M F Dunphy
Chief Commissioner