

Aircraft type and registration: BN-2A Islander G-BFNV

No & Type of engines: 2 Avco-Lycoming 0-540-E4CS piston engines

Year of Manufacture: 1978

Date and time (UTC): 10 May 1986 at 1115 hrs

Location: Fair Isle

Type of flight: Scheduled public transport

Persons on board: Crew — 2 Passengers — 5

Injuries: Crew — None Passengers — None

Nature of damage: Substantial airframe damage

Commander's Licence: Airline Transport Pilot's Licence

Commander's Age: 39 years

Commander's Total Flying Experience: 6185 hours (of which 455 were on type)

Information Source: AIB Field Investigation.

The aircraft was on a scheduled passenger flight from Lerwick (Tingwall) to Kirkwall, via Fair Isle, with two pilots and five passengers on board. Both pilots were fully qualified Islander aircraft commanders. Prior to the flight from Lerwick to Fair Isle, the designated aircraft commander had obtained a weather forecast by telephone from the Meteorological Office, Sella Ness, Shetland. The forecast indicated a moist south easterly flow with generally poor conditions. Kirkwall, the final destination and diversion aerodrome from Fair Isle, was reporting broken stratus at 700 feet with a gradual improvement forecast. The aerodrome attendant at Fair Isle was also contacted, and he reported conditions as suitable for landing. The attendant is not a qualified meteorological observer, but has lived on the island for many years and watched many arrivals and departures. His opinion is considered to be reliable.

The transit to Fair Isle proceeded without incident, and the aerodrome was overflowed and the aircraft positioned for an approach and landing on runway 24. The commander reports that he was aware of a moderate and gusting cross wind from the left, and set the aircraft up on the final approach at target threshold speed plus 20 knots (75 knots) with full flap and a fair amount of power. He was anticipating sink late on the final approach and corrected it with power when it occurred, without deviating significantly from the approach path. However, at a very late stage, the aircraft sank rapidly and in spite of immediate rotation — in which the other pilot also assisted — and the application of full power, they were unable to prevent the aircraft landing short of the runway threshold. Thereafter deceleration was rapid and, as the aircraft slowed to taxiing speed the commander turned clear of the landing strip and shut the engines down. Neither the two pilots nor the passengers considered that the landing had been unduly heavy.

Subsequent examination of the aircraft revealed that both main landing gear support struts were

disrupted and bent rearwards, there was local distortion in the left wingbox, and both flaps were buckled. The ground witness marks indicated that the aircraft had first contacted the ground with its main landing gear only, at a point 54 metres short of the displaced landing threshold, and 1 metre short of the actual threshold. This point was on a steep embankment which formed the unprepared undershoot area of runway 24. At the instant of impact the aircraft's flight path was upward at a gradient slightly less than that of the embankment. The damage to the main landing gear was rearward, and not vertical, indicating that the aircraft was climbing and not in a stalled condition. The airspeed indicator was subsequently calibrated and found to be accurate to between ± 1 knot.

The island of Fair Isle is approximately 3 nautical miles (nm) long and 1.25 nm wide. The aerodrome is situated near the centre of the island at a height of 223 feet above mean sea level (amsl). There is high ground 0.7 nm to the north of the landing strip rising to 712 feet amsl, and high ground rising to 434 feet amsl 0.75 nm south of the strip. There are no ATC or radio facilities, and the only up-to-date information on surface wind conditions available to inbound pilots is from a wind sock sited south of the runway 06 landing threshold. There is an anemometer sited at the weather station on the south of the island, and its information is recorded on an anemograph; however, this information is not available to inbound aircraft. All published data on the aerodrome facilities and dimensions contain warnings of wind turbulence.

Due to the close proximity of the landing strip to the surrounding high ground, and the resulting effect on low level and surface winds, the operator had stipulated in the Operations Manual reduced landing and take-off limitations depending upon the wind direction. These are as follows:

- Within arc 000°—030° (M) maximum wind speed 25 kt
- Within arc 030°—250° (M) maximum wind speed 30 kt
- Within arc 250°—360° (M) maximum wind speed 20 kt

The anemograph trace for the period 15 minutes either side of the landing incident on 10 May 1986 shows that the mean surface wind direction was 130° (T) and the wind strength was generally 20 to 25 knots with the occasional gust to 30 knots.