

Aircraft type and registration: Vickers Viscount 802 G-BLNB

No & Type of engines: Four Rolls Royce Dart Turbine engines

Year of Manufacture: 1957

Date and time (GMT): 9 March 1986 at 0025 hrs

Location: Southend Airport, Essex

Type of flight: Positioning

Persons on board: Crew — 2 Passengers — 1

Injuries: Crew — None Passengers — None

Nature of damage: Substantial

Commander's Licence: Airline Transport Pilot's Licence

Commander's Age: 53 years

Commander's Total Flying Experience: 13,000 hours (of which 595 were on type)

Information Source: AIB Field Investigation.

History of the flight

The crew reported at Glasgow at 2100 hrs for the co-pilot's fourth consecutive night duty and the commander's third. Their first flight was to be a freighter operation to Belfast followed by a positioning flight back to base at Southend.

The aircraft departed from Belfast at 2300 hrs and initially followed its flight plan route at flight level (FL) 170 and sometime after Wallasey it was cleared direct to Lambourne. Another pilot, who was a passenger on the flight, visited the flight deck and sat in the co-pilot's seat to watch the operation. The cruise was uneventful but owing to the forecast of fog in south east England after 2200 hrs a close eye was kept on the weather reports from London volmet. The commander, who was the handling pilot, called his company about midnight and passed them an estimated time of arrival (ETA) of 0025 hrs. Soon afterwards London Air Traffic Control (ATC) offered a descent clearance of FL120 but this was declined and descent was initiated in the Luton area.

At this time the co-pilot was busy behind his seat tidying up the aircraft's documents prior to completion of their tour of duty. A short time later London ATC cleared the aircraft to route from Lambourne to Southend direct, and it was further cleared down to 4000 feet on the Southend QNH. On transfer to Southend Approach the commander passed a position report at Lambourne that he was passing FL070 for 4000 feet. The co-pilot returned to his seat at an estimated distance of 18 miles from Southend. Although he was briefed that the Descent checks had been completed, apart from the stick shaker, he elected to check each item.

Southend Airport then passed the airfield weather as, wind calm, visibility 8 km in haze, no cloud, ground temperature of 0°C, and passed the runway in use as 06. When the commander identified

the airfield area he was further cleared to 1500 feet and asked by Southend to call turning 'left base'. After an initial distraction the co-pilot continued with the Approach checks while the commander looked for the airfield beacon and continued to decelerate to allow 43% flap to be selected. An initial prompt about the flap limiting speed was blocked by a simultaneous transmission from Southend to another inbound aircraft.

While striving to identify the runway 06 approach lighting, the commander did not register a reminder about the landing gear lowering and on informing Southend that he had the runway lights in sight he was immediately told to change frequency to Southend Tower. When the speed had decreased sufficiently, 68% and 85% flap were selected respectively. The last item on the final check was completed, the "Finals" call was made to the tower and the aircraft was cleared to land.

About 300 feet agl the Ground Proximity Warning System (GPWS) sounded, "Whoop, Whoop, Pull Up" and the commander reported that after cross checking his rate of descent he elected to land. The GPWS continued to sound until automatically inhibited at 50 feet at which point 100% flap was selected and the aircraft was flared for a landing. After a considerable float and as the aircraft settled down on to its propellers, inboard flap and fuselage, the landing gear warning horn sounded for the first time.

The Aerodrome Controller on duty in ATC had seen sparks coming from the aircraft during its landing run and after failing to get a response from the crew alerted the Aerodrome Fire Service (AFS). The AFS were quickly on the scene and extinguished a small fire by number 3 engine before laying a fluoroprotein foam blanket around the aircraft. This meant that both tenders had used up their onboard water supply and would need replenishment from the Local Authority Fire Service as soon as possible. They arrived at the airfield gate in reasonable time, but were unable to gain access to the accident site for some considerable time as another aircraft was making approaches to land on runway 33. This aircraft was eventually forced to divert as fog formed on the airfield. As the cockpit voice recorder clearly showed that the horn warning had not sounded when it should have done the engineering investigation centred around this area.

Technical aspects

Initial examination showed that although the pilot's landing gear selector was in the "Down" position the electric actuator of the landing gear hydraulic selector appeared to be at or near to its "Up" position. All landing gear legs appeared to be locked up with the doors fully closed. After the aircraft had been lifted, the electric actuator was disconnected from the hydraulic selector which was then moved manually to the "Down" position and the landing gear lowered easily using the emergency hand pump.

Extensive checking of landing gear actuation and warning systems electrical circuits, without disturbance of any connections and without electrical power, revealed all to be serviceable as set. Operation of the throttle and flap warning microswitches showed them to be working correctly and a check of the landing gear electric actuator showed it to be still on its retracted limit stop.

On application of power with the selectors as set, the electrical actuator immediately ran to the extended position, and during a series of retraction tests all landing gear operating and warning systems were found to function correctly including the landing gear warning horn.

A physical check of the flap selector and throttle microswitches showed that all were correctly set with sufficient mechanical overtravel to prevent erroneous opening of their contacts. As there was evidence that the warning horn had failed to operate as a result of either flap selection to 68% or closure of the throttles, the horn was removed for bench checks. Initial tests showed the horn to function and its resistance, current consumption, and minimum operating voltage to be satisfactory. It was noted that the diaphragm trembler contact preload was extremely light at 0.5 lb compared with that of a randomly selected comparator horn. After cold soak in a freezer, the diaphragm preload was found to have increased to 1.25 lb. The horn was then subjected to a warm soak at 35 to 40 °C after which the diaphragm contacts became open circuit and the horn would not operate when electrical power was applied unless given a sharp tap, when it

would sound normally. The position of the warning horn in the aircraft is such that it is in the airstream from the foot-warmer outlets.

The manufacturer of the aircraft is currently considering the possibility of fitting an alternative type of horn, and is reviewing maintenance and overhaul procedures on the existing horn in conjunction with its manufacturer.