

No: 1/87

Ref: 1c

Aircraft type and registration: Reims Cessna F172N G-BFOW

No & Type of engines: 1 Avco Lycoming O-320-H2AD piston engine

Year of Manufacture: 1973

Date and time (UTC): 10 February 1985 at 1602 hrs

Location: 13.3 nm Northwest of Alderney, C.I.

Type of flight: Private

Persons on board: Crew — 1 Passengers — None

Injuries: Crew — Unknown Passengers — N/A

Nature of damage: Airframe not recovered. Engine recovered 13 months later from the sea bed 12 nautical miles south of Swanage

Commander's Licence: Airline Transport Pilot's Licence

Commander's Age: 36 years

Commander's Total Flying Experience: 9000 hours (hours on type not known)

Information Source: AIB Field Investigation

The aircraft was on a flight from Shoreham to Jersey with just the pilot on board. The aircraft was refuelled to full tanks on 1 January 1985 and was flown for 1 hour on that day. On 10 February 1985 the pilot flew the aircraft for 15 minutes with 3 passengers before disembarking them and completing the necessary formalities for a Channel Islands flight. He then took-off at 1500 hrs.

He had obtained the latest Jersey weather after landing from the 15 minute flight which was passed to him by Air Traffic Control (ATC) as 080°/17 knots (kt), visibility 3000 metres, recent snow, 7 oktas at 700 feet, temperature minus zero, with no significant change. Guernsey weather was similar with winds of up to 35 kt. Terminal Approach forecasts were obtained and a flight plan filed prior to the earlier short flight on that day. The en-route weather was mainly influenced by an occlusion stretching from the Brittany coast to the southwest of the Irish Republic. The aftercast indicates that the cloud cover would increase and lower in the area of the Channel Islands, and that the risk of severe icing and low level turbulence would also have increased in the vicinity.

The flight appears to have progressed normally with the aircraft flying at flight level (FL) 80 and London ATC handing over control to Jersey. The aircraft was cleared by Jersey to route Ortac, Alderney, Juliet, Whiskey for runway 09. The 1520 hrs Jersey weather was also passed to the pilot — 080°/16 kt, visibility 1500 metres, snow, 7 oktas 800 feet, temperature minus zero, and the runway visual range (RVR) in excess of 1000 metres.

At 1542 hrs the pilot requested a descent clearance as he was unable to maintain height due to

an unspecified engine problem, and this was approved by Jersey ATC. At 1548 hrs the pilot reported "just checking Ortac passing five zero, I'm descending gently". In the event that the pilot would want to divert to Alderney, ATC passed the pilot the latest Alderney weather, wind easterly 24 kt, 5 km in haze, 7 oktas at 600 feet, and this was acknowledged. Shortly after 1549 hrs ATC enquired whether the aircraft was still experiencing problems with the engine, and received a reply in the affirmative. At 1552 hrs the pilot was given the aircraft's range to Alderney as 14 miles, then just before 1554 hrs, a range of 12 miles. A Mayday distress message was broadcast at 1554 hrs on the same frequency, with the information that the aircraft would not be able to make Alderney, that the engine had cut out, or was cutting out, and at a range of approximately 12 miles from Alderney the aircraft would be ditching in the next 2—3 minutes. Just before 1555 hrs the pilot broadcast that he would be ditching in a minute, and asked ATC to contact a Shoreham telephone number. ATC acknowledged and told him that the aircraft was being tracked by Guernsey radar. At 1556 Jersey ATC called the aircraft to relay a suggested heading from Guernsey of 170°M to track towards Alderney. This was not acknowledged and there was no further contact with the aircraft.

At some time during this latter period, the aircraft was seen on radar to turn to its right and head in a westerly direction for approximately 10 miles before heading back towards the east. Radar contact was lost at a point 326°M and 13.3 nautical miles (nm) from Alderney Aerodrome. Two ships were in the area at the time, and were showing on Guernsey's radar. A light aircraft directed to the area to search, was at times flying at 2-300 feet above mean sea level and was tracked by Guernsey radar throughout. There were no radar recording facilities at Jersey or Guernsey.

A full air and sea search was initiated, but nothing was found.

On 16 March 1986 an Avco Lycoming engine with attached propeller was trawled up 12 nm south of Swanage.

The main engine data plate was missing, the attaching rivet holes being void. Other data plates had also suffered obliteration due to corrosion but the vacuum pump data plate was readable and there were numerous identifying numbers stamped on engine components. From the propeller serial number and two crankcase shell numbers the engine was identified as the replacement unit fitted to G-BFOW in 1984.

The engine (Avco-Lycoming 0320-H-2AD) had the propeller and part of the engine support frame still attached but of the ancillary equipment the dual magneto was missing. The exhaust box, induction air box and the engine support frame exhibited deformation which, though light in terms of crash damage, was consistent with a frontal underside impact. One blade of the propeller had a slight (10 degrees) rearward bend and the spinner had been crushed from the front and pressed around the propeller hub. One leg of the engine support frame was missing, having separated at bending failures in the steel tube members. The other three legs had the nuts and bolts present in the attaching flange and one had a small portion of airframe present.

The engine and its accessories had suffered varying degrees of contamination, corrosion and degradation from the immersion in the sea. By a combination of dismantling and cutting, the engine and ancillaries were opened up for examination. No mechanical defect or failure was found within the engine. All external damage and failures were such as would have been caused by impact followed by separation of the engine from the airframe. The carburettor was heavily contaminated by corrosion products particularly where dissimilar metals were adjacent. Thus the main jet and inlet strainer were blocked but no material was identified which could have been the cause of a pre-crash blockage. The float assembly and inlet valve were intact. The throttle had seized, due to corrosion, in a position near to fully closed and the mixture control was similarly closed. Separation loads on these controls would have moved them to these positions. The induction air box, like the adjacent exhaust muffler, had been slightly crushed and the hot air valve was trapped in the 'hot' position. The control cable was absent but the clamping bolt with its washers and self locking nut were present on the valve's lever. Separating loads on the cable, assuming it to have been pulled out of the clamping bolt,

would have moved the lever to the as found position but there was no evidence that the valve had moved since the box had been initially crushed.

The sparking plug electrodes were all coated with rust but most were undamaged and of normal appearance under the corrosion. Two plugs, served by separate magnetos, showed heavy carbon contamination.

The general condition of the engine and propeller, and nature of the sea bed between the points of aircraft disappearance, and engine recovery, make it unlikely that the engine migrated a significant distance due to the effect of tidal current or slope.