

No: 7/92

Ref: EW/C92/3/4

Category: 1b

Aircraft Type and Registration: Grumman Widgeon, N95J

No & Type of Engines: 1 Lycoming GD-435-C2B piston engine (right)
1 Lycoming GD-435-C2B2 piston engine (left)

Year of Manufacture: 1944

Date & Time (UTC): 27 March 1992 at 1403 hrs

Location: Blackbushe Airport, Hampshire

Type of Flight: Private

Persons on Board: Crew - 1 Passengers - 1

Injuries: Crew - None Passengers - Minor

Nature of Damage: Damaged beyond economic repair

Commander's Licence: American Private Pilot's Licence with Instrument and Multi-engine landplane rating. UK Private Pilot's Licence

Commander's Age: 54 years

Commander's Flying Experience: 3,000 hours (of which 30 minutes were on type)

Information Source: AAIB Field Investigation

The planned flight was from Biggin Hill Airfield to Cardiff Airport, where engineering work was to be undertaken to prepare the aircraft for a ferry flight to the United States of America. At 1230 hrs the aircraft was refuelled to full tanks by the addition of 170 litres of aviation gasoline; the engine oil levels were checked and replenished as necessary. The pilot completed a preflight check and taxied to a suitable area to carry out the engine checks. He later reported that he had experienced no problems with either engine. The aircraft communications equipment was functioning less than ideally, however. He attributed this to the poor state of the battery and considered that it would improve when airborne. Take-off was at 1331 hrs.

The aircraft climbed to 1,500 feet and tracked towards the Ockham VOR. The landing gear was not retracted due to the landing gear system being unserviceable. The pilot noted that the left engine misfired once or twice, with an associated speed drop of about 50 rpm, however it cleared itself and no further problems were experienced until the aircraft was in the vicinity of Blackbushe Airport.

Both engines had been set to about 29 inches of manifold pressure and 2,500 rpm; both mixture controls were fully rich. This gave an indicated airspeed of about 120 kt at the cruising altitude of 1,500 feet. As he passed over Blackbushe, the pilot noticed that the airspeed was slowly reducing through 110 kt and that the aircraft was descending at about 200 fpm. He tried to increase power, but the engines did not respond. Although the fuel pressures appeared normal, he decided to switch on both electric fuel pumps; however he noted that this did not appear to increase the indicated fuel pressure. A descending left turn was initiated in order to remain over the airfield, both carburettor heat controls were pulled and the power and propeller levers were selected fully forward. However this had no apparent effect on the power output of either engine. By this stage the aircraft had descended to about 400 to 500 feet agl. The descent continued and, at about 200 to 300 feet, the pilot decided to attempt a landing on runway 26. However, the aircraft flew through the extended centreline and straightened-out on a heading of about 230°. Full flap was selected and the control column held fully back before touchdown. Shortly afterwards the left float impacted the grassed area to the north side of the runway. The aircraft came to rest on the paved area with the left engine stopped and the right engine running at about idle rpm. The pilot shut off both fuel cocks and he and the passenger, who were uninjured, vacated the aircraft via the rear passenger door.

The Airport Fire Service arrived promptly at the scene and, although there was no fire, covered the area with foam, a major leakage of fuel having taken place. A short time afterwards the pilot, accompanied by a fire officer, re-entered the aircraft and carried out a more comprehensive shutdown check.

The surface wind at the time of the accident was northerly 20 kt, with gusts to 40 kt. An aftercast indicated that the temperature/dew point at 1,500 feet was +3°C/-2°C; the relative humidity was 71%. These conditions would be unlikely to produce serious induction icing, at cruise power, in pressure type carburettors of the type fitted to the engines of this aircraft.

Examination of the Aircraft

Examination of the aircraft showed that it had impacted the ground with the landing gear extended, partial flap extended (ie about 10 degrees), left wing low with considerable left drift and with a descent rate which was higher than normal for landing. Immediately after the initial impact the left main landing gear had been overstressed, followed by detachment of the left wing float. As a result of the high vertical speed at ground impact the right wing had deflected downwards, which had induced a 5 to 10° permanent bend in the wing spar box, inboard of the right engine. As a result of this damage, the lower skin of the right main integral fuel tank had suffered a chordwise 'split' which allowed the contents of this tank to pour down the right-hand side of the fuselage, and into the cabin.

General examination of the aircraft showed it to be in extremely poor condition. There were large corrosion holes in the tailplanes, through which fingers could be inserted, and in one of the fuel tanks. Both engines had been losing engine oil during the 25 minute flight, with the right engine having lost 1.5 quarts of oil and the left, 1 quart. In both cases the oil had leaked from the sump and gearbox seals and had covered the underside of both wings and the tailplanes. There was good evidence of long term fuel leaks from both fuel tanks. The fuel crossfeed valve was found seized and appeared to have been in that condition for some considerable time. The rudder trim had been cross-rigged so that it functioned in the opposite sense. A make-shift label, consisting of a piece of black self adhesive tape, had been placed over the rudder trim sense placard in the cockpit. It is understood that the rudder trim system had been in this condition for at least two years. One of the right-hand engine magnetos was found to be permanently 'live' and, again, had been in that condition for some time.

Fuel samples were taken from both wing tank drains and from both engine fuel filters. Oil samples were taken from each engine. It was noted that both fuel filters were clean. When taking the oil samples, it was found that when the right engine oil drain plug was removed that the drain hole was completely blocked by an almost solid black oily 'sludge', which had to be removed before an oil sample could be taken. When the left engine oil drain plug was removed, a quantity of water flowed out ahead of the oil. These samples were analysed by the Petroleum, Oils and Lubricant Laboratory at the Defence Quality Assurance Establishment. It was found that the fuel samples from the left and right main fuel tanks were of uncontaminated Avgas 100LL. However the fuel samples from the two engine fuel filters were found to be contaminated with water. The quantity of water present in the fuel, in the left-hand filter especially, would have been sufficient to have caused engine running problems, if representative of the fuel entering the engine at the time of the reported power loss. Both oil samples exhibited evidence of the oil having been 'well used' and at some stage automotive oil had been added, with more present in the left engine than the right. There was considerable quantities of solid matter in the oil samples from both engines which in the main consisted of Iron, Aluminum, Magnesium, Lead and a fibrous material. Both samples had evidence of fuel dilution of the oil. In general the oil samples indicated that the engine maintenance had been poor.

Aircraft History and Documentation.

From 1988 to 1989 the aircraft had based in Cyprus, during which time it had flown about 75 hours. In April 1991 it was entered in an aircraft auction held at Wroughton Airfield in the United Kingdom, where it did not attract a purchaser. The aircraft was subsequently hangered at Wroughton but not flown for some two months before being flown to Popham Airfield, where it was parked in the open and not flown for a further number of months. In the October 1991 it was flown from Popham to Biggin Hill, via Elstree, and entered into another aircraft auction where again it did not sell. It was

then parked outside at Biggin Hill Airfield, but not flown, until the end of February/ beginning of March 1992. In March the aircraft was cleaned and moved into a hanger at Biggin Hill where prospective buyers subsequently viewed it. The aircraft was sold about 10 days prior to the accident. The new owner, who held an FAA Airframe and Propulsion (A&P) Engineers Licence, spent about two days inspecting the aircraft prior to completing the purchase. According to the aircraft's log book, its total flying time between December 1989 and February 1991 was 128 hours, and it had not flown from February 1991 until the date of the accident. The aircraft's documentation had no record of the flight from Cyprus to the UK, or any flying within the UK. The airframe, engine and propeller log books indicated that no work had been carried out since 1989. In February 1991, an FAA A&P Engineer with Inspection Authority and based in Switzerland had signed for an Annual Inspection in all the log books, the previous Annual Inspection having expired on 2 December 1990. In March 1992, the new owner had signed for an inspection (type unspecified) in the airframe log book. A Special Flight Permit had been issued by the FAA, valid from 10 March 92 to 30 March 92, for a flight from Bangor Main to Deer Park, USA. No paperwork was found that authorised any flight outside the USA.

The circumstances of this accident have been reported to the FAA.