

**No: 9/91**

**Ref: EW/G91/06/16**

**Category: 1c**

**Aircraft Type and Registration:** Boeing A75L3 Stearman, G-BPMD

**No & Type of Engines:** 1 Continental W670-6A piston engine

**Year of Manufacture:** 1944 (re-manufactured in 1982)

**Date & Time (UTC):** 20 June 1991 at 0822 hrs

**Location:** Near Andoversford, Gloucestershire

**Type of Flight:** Private

**Persons on Board:** Crew - 1                      Passengers - 1

**Injuries:** Crew - None                      Passengers - None

**Nature of Damage:** Fire damage to cowlings and forward fuselage

**Commander's Licence:** Airline Transport Pilot's Licence

**Commander's Age:** 48 years

**Commander's Flying Experience:** 13,144 hours (of which 38 were on type)

**Information Source:** Aircraft Accident Report Form submitted by the pilot and examination of the aircraft by AAIB

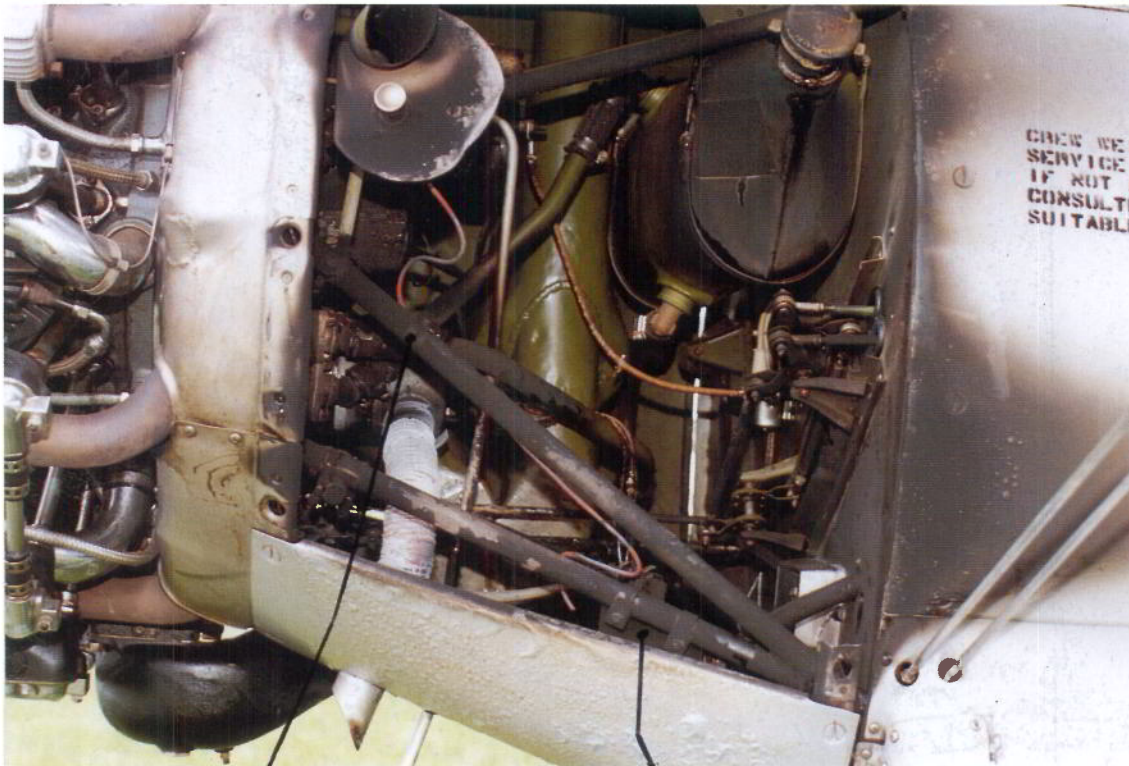
The aircraft was on a flight from White Waltham to Staverton at an altitude of 2500 ft when the passenger, who was in the front cockpit, smelt fuel. As the aircraft was approaching Andoversford, the passenger informed the pilot that he could see smoke. The pilot then became aware of a fire on the left side of the engine cowling. By this time the lower forward area of the front cockpit had become sufficiently hot to cause the passenger to move back in the cockpit as far as he was able. The pilot turned off the fuel and magnetos, lowered the nose in order to gain speed, and the flames then extinguished. A successful forced landing was carried out in a field adjacent to the A40 road. Following inspection and temporary repair by personnel from the maintenance organisation to which the aircraft was being taken, the aircraft was flown on to Staverton.

Subsequent examination of the aircraft showed that the fire had damaged the lower and left side engine cowlings, the aluminum skin beneath the front cockpit and most of the equipment and wiring between the firewall and the rear of the engine. In addition there was heat damage to the battery box and its feeder cables, which were situated in the front cockpit between the rudder pedals. It was evident that although the firewall had not been directly penetrated by the fire, hot gases and/or flames had flowed around its lower edge and entered the front cockpit, after burning through the leading edge of the skin

directly aft of the firewall. None of the fabric covering of the fuselage or wings had been affected by the fire.

It was established that a fuel leak had occurred as a result of fracture of the small bore copper priming pipe which connected the fuel strainer to the priming pump, at a position where it attached to the top of the strainer housing. The pipe end was secured to the strainer outlet by a compression type of fitting where a small sealing olive had been swaged onto the end of the pipe by the action of tightening the associated nut. A detailed examination of this pipe showed that it had failed in fatigue. The failure had occurred at a bend in the pipe and the diameter of this pipe (4.75 mm) was found to be approximately twice that of pipes fitted to other aircraft examined. On the other Stearman aircraft inspected, this pipe, which is approximately 60 cm in length, was invariably found to be clipped at its mid position to one of the engine support tubes in order to minimise the effects of vibration. When this aircraft was first examined after the fire the pipe was observed to be secured, near its top end, to an engine support tube, leaving the relatively long unsupported length of pipe to the strainer free to vibrate. The accompanying photographs show the fractured pipe, olive-end and fire damage.

The most recent maintenance on this aircraft was carried out for renewal of its Certificate of Airworthiness in May 1991.



PIPE CLIPPED TO THIS TUBE

FUEL STRAINER

BROKEN PIPE END c.w. OLIVE



PIPE FAILURE LOCATION

BURNT WIRES

FIRE DAMAGE TO AREAS ON BOTH SIDES OF FIREWALL