

No: 3/91

Ref: EW/G90/12/12

Category: 1c

**Aircraft Type  
and Registration:**

Pitts Special S-1C, G-BRVL

**No & Type of Engines:**

1 Lycoming IO-320-B1A piston engine

**Year of Manufacture:**

1981

**Date and Time (UTC):**

30 December 1990 at 1436 hrs

**Location:**

Sompting, near Shoreham, Sussex

**Type of Flight:**

Private

**Persons on Board:**

Crew - 1                      Passengers - None

**Injuries:**

Crew - None                      Passengers - N/A

**Nature of Damage:**

Extensive damage to cowlings, tail surfaces and fuselage

**Commander's Licence:**

Private Pilot's Licence with IMC rating

**Commander's Age:**

47 years

**Commander's Total  
Flying Experience:**

218 hours (of which 13 were on type)

**Information Source:**

Aircraft Accident Report Form submitted by the pilot

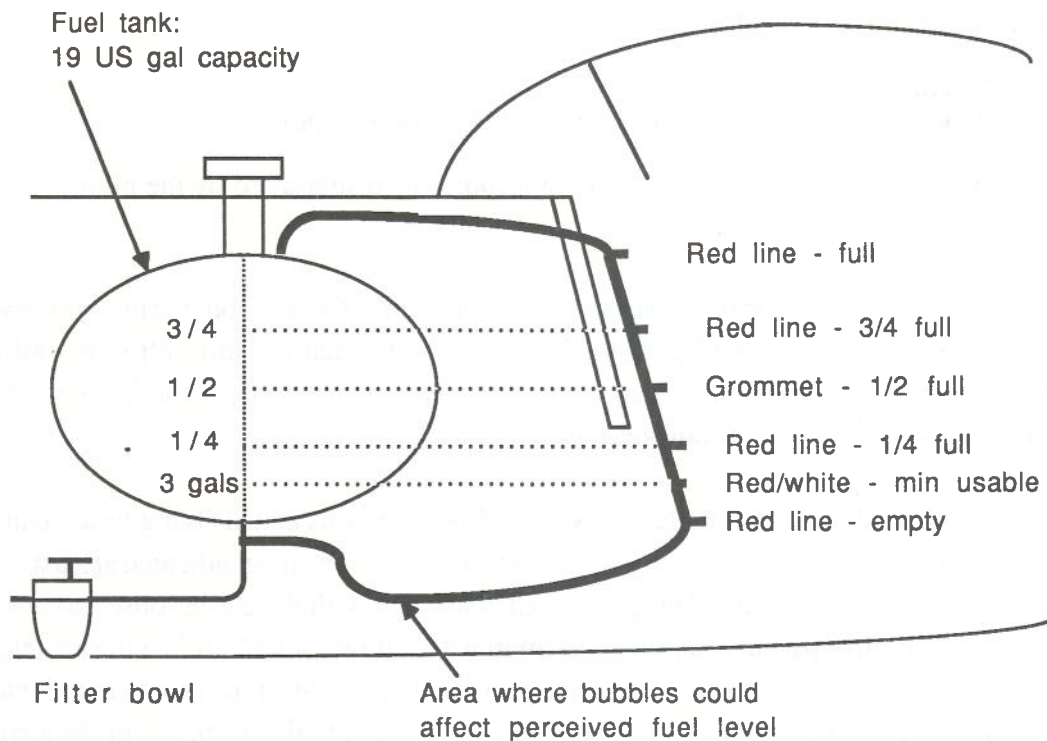
When the aircraft was checked prior to a flight from Shoreham to Goodwood, the pilot observed that the fuel contents sight-tube showed 7 gallons above the useable mark. Thirty litres of 100LL were added, bringing the total tank contents to about 13½ gallons, *ie* enough for 2 hours of flying plus a 2 gallon allowance for 30 minutes ground running.

The flight to Goodwood took 45 minutes, of which 35 minutes was actual flying time. During the pre-flight check before returning to Shoreham, the fuel contents sight-tube indicated at least 8 gallons remaining, *i.e.* in excess of 1 hour's flying time and consistent with the earlier observations. After the engine was restarted, departure was delayed 8 minutes to allow a squall to clear the airfield. With approximately 10 minutes to run to Shoreham, the pilot had to turn the aircraft south in order to make an approach from the west, as a squall line was affecting the area to the northeast of the airfield. A check on the fuel state showed an indicated 5 gallons remaining. When the aircraft was 3 nm from Shoreham, approximately 35 minutes after the engine start at Goodwood, the engine 'coughed' and ceased producing power. The pilot assessed that his 1900 ft altitude was insufficient to reach the airfield and so he turned the aircraft towards adjacent fields and made a "Mayday" call to Shoreham ATC. Attempts to restart the engine were unsuccessful and the aircraft force-landed in a ploughed field after descending underneath power cables that bounded the field. The aircraft immediately pitched over onto its nose and then performed a somersault manoeuvre, coming to rest in an upright attitude. The full harness held on impact, although the back of the seat failed. The pilot was uninjured

and experienced no difficulty in leaving the aircraft. He immediately checked the fuel-sight tube and saw that it was indicating minimum useable fuel, although the fuel filter glass bowl was full.

Following the accident, the pilot and another of the aircraft's co-owners have speculated that there may have been bubbles trapped in the lower loop of the fuel sight glass (see accompanying sketch) which could have affected the perceived fuel state. Bubbles had in fact been observed on previous occasions and were thought to have resulted from aerobatics. On the day of the accident however, the pilot did not get right down into the cockpit to check the lower loop of the sight-tube. The pilot has since talked with another Pitts owner who also believes that bubbles can affect the sight-tube (the narrower the bore of the tube, the greater the probability of such an occurrence) and who accordingly checks the fuel level prior to flight by means of a calibrated dip stick.

Neither the CAA nor the PFA have any reports of similar problems affecting this type of aircraft.



**G-BRVL Fuel Contents Indication System Schematic**  
(Calibration is for aircraft in level flight attitude. Appx 4" subtracted from readings taken on the ground.)