

No: 11/92

Ref: EW/G92/08/04

Category: 1c

Aircraft Type and Registration: Replica SE5A, G-BMDB

No & Type of Engines: 1 Continental O-200-A piston engine

Year of Manufacture: 1988

Date & Time (UTC): 2 August 1992 at 1145 hrs

Location: Lymington farm strip, Hampshire

Type of Flight: Private

Persons on Board: Crew - 1 Passengers - None

Injuries: Crew - None Passengers - N/A

Nature of Damage: Damage to nose, engine, propeller, undercarriage and wings

Commander's Licence: Private Pilot's Licence

Commander's Age: 60 years

Commander's Flying Experience: 844 hours (of which 205 were on type)
Last 90 days - 21 hours
Last 28 days - 7 hours

Information Source: Aircraft Accident Report Form submitted by the pilot and examinations by AAIB Inspector

The pilot reported that the aircraft, accompanied by another SE5A replica, had arrived at the farm strip at about 1200 hrs after a 30 minute flight from Boscombe Down in good weather. Visibility was good under 8/8ths cloud with a 2000 foot cloudbase, and the surface temperature was estimated at 22°C.

At about 1240 hrs, both aircraft were started for departure and taxied to the far end of the strip. Cockpit checks, including magnetos and carburettor hot air, were carried out whilst taxiing. The other SE5A replica took-off first and then G-BMDB turned into wind (some 10 kt) and took-off normally.





The engine developed normal power during the take-off until, at an estimated 70 feet. agl and near the end of the strip, it suddenly lost power. A video recording of the event showed that the engine continued to run as the aircraft lost height, but at a reduced speed. Very shortly after this the right wing dropped. The pilot considered that this was due to slipstream effects from the preceding aircraft, which was quite close. The aircraft slowly turned to the right and struck the ground with its right

lower wing, before 'ground-looping' through about 180° and coming to rest within a distance of about 50 feet. There was no fire and the pilot, who escaped injury, was able to vacate the cockpit unaided.

Several possible reasons for the power loss were investigated, but none could be positively identified as the cause. The magnetos were bench-tested and the carburettor checked by an approved organisation, but no defect which might have caused, or contributed to, the power loss was found. The pilot, who was also the builder of the aircraft, considered that the fuel shut-off valve may have partially closed during the take-off. After the accident, the valve was found in a partly closed condition which could have restricted the fuel flow to the engine. The valve was a conventional ball valve with the operating lever connected, by a series of rods, to a 'slider' mechanism in the cockpit. The slider mechanism had a lever which engaged in a detent to lock the valve open, however the detent was not very positive in its operation. In addition, the lever was sprung-loaded towards the fuel valve 'closed' position. The ground impact had separated the engine from the fuselage and the rods between the slider and the valve had been affected by impact loads. The pilot also reported that, following a previous occasion when the lever had been found to be out of the detent before take-off, he normally included this item in his final checks before take-off, but could not recall doing so on this occasion.

The rapidity and lack of warning associated with the engine rundown supported this possibility, in the view of the pilot, and tended to exclude carburettor icing as the cause. The AAIB obtained a meteorological aftercast which indicated that the surface temperature was 18°C and the dew point 13°C, giving a relative humidity (RH) of 72%. At 1000 feet agl the temperature was 14.5°C, dew point 10.5°C and the RH 74%. The meteorological office commented: "These are some fairly high relative humidities and those above 500 feet fall into the 'serious any power band' on the carburettor icing diagram". In addition, the aircraft was operating on Mogas, which is widely acknowledged to increase the susceptibility to icing. Although it seems unlikely that this accident was initiated by carburettor icing, the following diagram is provided to highlight this issue for all pilots.

CARB ICING

-  **Serious icing – any power**
-  **Moderate icing – cruise power**
Serious icing – descent power
-  **Serious icing – descent power**
-  **Light icing – cruise or descent power**

