Gulfstream AA-5A Cheetah, G-BGVW

AAIB Bulletin No: 3/2003	**Ref: EW/G2002/11/12**	**Category: 1.3**
Aircraft Type and Registration:	Gulfstream AA-5A Cheetah, G-BGVW	
No & Type of Engines:	1 Lycoming O-320-E2G piston engine	
Year of Manufacture:	1978	
Date & Time (UTC):	14 November 2002 at 1522 hrs	
Location:	Near Elstree Aerodrome, Herts	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - 1(Minor)	Passengers - N/A
Nature of Damage:	Damage to canopy, wings, engine and propeller	
Commander's Licence:	Commercial Pilots Licence with Instructors Rating	
Commander's Age:	24 years	
Commander's Flying Experience:	645 hours (of which 375 were on type)	
	Last 90 days - 154 hours	
	Last 28 days - 34 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

Whilst taxiing to the holding point for a ferry flight to Blackbushe, the pilot experienced what he believed to be mild carburettor icing. During the 6 to 7 minute delay prior to takeoff, he increased the engine power to 1,500 rpm on several occasions and applied carburettor heat in an attempt to remove any icing. Furthermore, whilst stationary on the runway prior to takeoff he set 2,000 rpm and applied carburettor heat for 5 seconds. During the take-off roll full power achieved 2,200 rpm and the aircraft climbed away with a rate of climb of just less than 500 fpm. At 200 feet above the airfield and with full power still applied, the engine rpm reduced to 1,800. The pilot was unable to maintain level flight and carried out a forced landing in a ploughed field, half a mile to the north west of the airfield. On landing the noseleg collapsed and the aircraft pitched inverted. The pilot evacuated the aircraft through the canopy with only minor injuries.

Subsequent engineering investigation revealed a significant amount of water in the electric fuel pump and the carburettor float chamber. The wing fuel caps were found to be in a satisfactory

condition. The aircraft has 4 fuel drain points, one in each of the sump tanks located at each wing root and one set directly in each of the two wing fuel tanks. The contents of the wing fuel tank enter the fuel drain via two drain holes within the tank. One of the drain holes in each of the wing fuel drains was found to be blocked. The tank contents, however, was still able to be drained via the remaining unblocked hole. The pilot reported that he carried out a fuel drain check prior to engine start and found water at each of the drain points. He had continued to drain the fuel until there was no longer any trace of water.

The weather conditions at the time of the accident gave a temperature of +10?C and a dew point of +7?C. The CAA General Aviation Safety Sense Leaflet No 3B titled *Winter Flying* contains a graph depicting the conditions conducive to carburettor icing. The conditions described above fall within the area of serious carburettor icing. However, the sudden reduction in engine rpm, the water found in the fuel pump and float chamber and the fact that the aircraft had been left outside for 6 weeks prior to the flight with the fuel tanks two thirds full, make water contamination of the fuel a more likely cause of the engine problem.