

## X'Air Falcon 133(1), G-CCNL

<b>AAIB Bulletin No: 7/2004</b>	<b>Ref: EW/G2004/03/11</b>	<b>Category: 1.4</b>
<b>Aircraft Type and Registration:</b>	X'Air Falcon 133(1), G-CCNL	
<b>No &amp; Type of Engines:</b>	1 Verner 133M piston engine	
<b>Year of Manufacture:</b>	2003	
<b>Date &amp; Time (UTC):</b>	18 March 2004 at 1135 hrs	
<b>Location:</b>	Near Ham, Taunton, Somerset	
<b>Type of Flight:</b>	Private	
<b>Persons on Board:</b>	Crew - 2	Passengers - None
<b>Injuries:</b>	Crew - None	Passengers - N/A
<b>Nature of Damage:</b>	Slight damage to landing gear	
<b>Commander's Licence:</b>	Private Pilot's Licence	
<b>Commander's Age:</b>	57 years	
<b>Commander's Flying Experience:</b>	603 hours (of which 430 were on type)	
	Last 90 days - 17 hours	
	Last 28 days - 8 hours	
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot	

This aircraft was being flown by a BMAA test pilot so that position error correction data could be obtained and stick forces during a 2g Vmax turn could be measured. The position error correction tests could not be completed because of a problem with the GPS equipment. The aircraft was therefore established at 2,000 feet, the minimum height deemed necessary for the commencement of the 2g Vmax descending turn manoeuvre. During the descending turn the airspeed was increased and 2g was achieved and maintained for at least six seconds whilst the stick force was measured. During the manoeuvre however, the engine stopped and subsequently failed to respond to either throttle opening or an attempted restart.

The crew, who had deliberately conducted this demanding manoeuvre above a large field, positioned the aircraft for a forced landing into wind. At this point however, they observed power lines running across the field and considered that they had insufficient height to complete an orbit and fly beneath them or to reach an alternate field. The approach was therefore continued over the wires and the aircraft side-slipped to lose excess height. The wing mounted pitot-static system is known to under-read to some extent and this masked the resulting higher than normal approach speed. During the landing flare the aircraft floated and subsequently touched down with only 60 metres of the field remaining. The crew tried to maximise this by tracking towards the field's extreme corner but were unable to prevent the aircraft from impacting with the boundary hedge at approximately 10 kt.

This aircraft had a wing mounted standard pitot-static system. It is also possible however, to have the system mounted in the cockpit where its performance is more accurate unless the optional side doors are removed which then causes the airspeed to over-read. The pilot commented that he was used to

flying with the more accurate cockpit mounted system and the under-reading of the wing mounted system may have led him to misjudge his speed during the final stages of the approach.

Subsequent investigation by the pilot identified the cause of the engine failure as a carburettor float level problem. The engine is equipped with a PHBE36HS carburettor fitted with a twin float system located in a single fuel bowl. The twin floats were joined together on the same arm such that neither float could move independent of the other. It appeared that during extreme manoeuvres, such as the 2g turn, fuel starvation could occur as this arrangement allowed the fuel level in the carburettor bowl to fall below the minimum level necessary to feed the fuel jet. A modification to the float arm has since been made allowing the floats to move independently of each other; the rationale being that the buoyancy of one float is insufficient to close the fuel inlet valve, thereby making the carburettor less susceptible to fuel starvation at extreme attitudes.

All Verner engines, used to power the X'Air Falcon in the United Kingdom, now incorporate this modification.