

ACCIDENT

Aircraft Type and Registration:	Thruster T600N, G-BZJC	
No & Type of Engines:	1 Jabiru 2200A piston engine	
Year of Manufacture:	2001	
Date & Time (UTC):	9 October 2005 at 1325 hrs	
Location:	Stokes Bay Golf Course, Gosport, Hampshire	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - 1
Injuries:	Crew - None	Passengers - None
Nature of Damage:	Impact damage to wings, tail plane and propeller. Engine shock loaded	
Commander's Licence:	National Private Pilot's Licence	
Commander's Age:	42 years	
Commander's Flying Experience:	82 hours (all on type) Last 90 days - 8 hours Last 28 days - 5 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and additional enquiries by the AAIB	

Synopsis

Following an engine failure, the aircraft collided with a tree whilst on the approach to the forced landing site. The aircraft was extensively damaged; however, the pilot and passenger were uninjured. The cause of the engine failure was not established.

History of the flight

On the morning of the accident the pilot and passenger departed their home airfield at Sandown on an uneventful 40 minute flight to Goodwood. After stopping for lunch they departed Goodwood at approximately 1304 hrs on the return journey to Sandown. The aircraft climbed to 4,000 ft and on approaching the coast near Thorney

Island the pilot became aware of a large cloud formation over the Isle of Wight. In order to remain clear of cloud the pilot entered a glide descent to 3,000 ft. On reaching 3,000 ft he realised that he was still too high and, therefore, continued his descent to 2,000 ft, which was the height that he normally flew across the Solent. Shortly after descending through 3,000 ft the engine started to run roughly so the pilot opened the throttle to increase power, which appeared to clear the rough running, and turned to track along the coast until he was satisfied that the engine was operating normally. As the problem appeared to have cleared, the pilot headed out across the Solent at 2,000 ft. The engine however, began

to run roughly again and eventually stopped. The pilot turned back towards the nearest land at Gosport and said he made a 'Mayday' call on 120.225 MHz, the Solent Radar frequency to the effect 'MAYDAY, MAYDAY, MAYDAY, G-BZJC, ENGINE FAILURE, 2,000 FT OVER THE SOLENT HEADING FOR GOSPORT, TWO PERSONS ON BOARD'. During this period the passenger assisted in attempting to restart the engine by operating the electrical starter whilst the pilot flew the aircraft and operated the throttle and choke levers. As the pilot completed the turn he noted that the tide was in and consequently there was no foreshore on which to land. However, immediately ahead of the aircraft was a golf course with a fairway running perpendicular to the aircraft's track; the pilot noticed that there were three golfers on the fairway. Beyond the golf course and approximately 400 yards from the shore was an open area, subsequently identified as six adjacent football pitches, which the pilot selected as his landing area.

As the aircraft approached the shore the pilot made a second 'Mayday' call. He states that he then encountered a great deal of sink as he crossed the coast and realised that he would not be able to clear a small tree that was situated along the edge of the fairway and his intended landing site. The aircraft hit the tree and became entangled with one wing touching the ground. The pilot exited the aircraft and then assisted his passenger out of the wreckage before making the aircraft safe. The pilot and passenger, who were both wearing four point harnesses, were uninjured and the golfers, who were approximately 30 yards away from the crash site, were unaware of the aircraft until the impact. Approximately 5 minutes after the accident a Coast Guard helicopter landed and a crewman offered assistance.

The pilot stated that the aircraft had 35 litres of Mogas on board when he departed Sandown and that following

the accident he could see that approximately 20 litres of fuel remained in the tank.

Rescue co-ordination

At approximately 1323 hrs the controller at Solent Radar was informed by a pilot of a commercial aircraft outbound from Southampton (Eastleigh) to Alderney that he had heard a 'Mayday' message. When asked to relay the message the pilot stated that he had no details apart from "MAYDAY, MAYDAY, MAYDAY" and the report of an engine failure. At this point the controller heard an aircraft transmit "MAYDAY, MAYDAY". The controller accounted for all the aircraft working Solent Radar and established that none of the aircraft had heard any other details from the unknown aircraft. The commercial aircraft and a commercial helicopter operating in the area offered to divert to the Solent area to search for the aircraft. Meanwhile, the controller alerted the London Area Control Centre and was subsequently informed that a light aircraft had crashed on the golf course near Lee-on-Solent. Following the incident the supervisor at Solent Radar reviewed the radio recordings and confirmed that the controller's account was correct.

A yachtsman, who was also a qualified pilot, was sailing in the Solent when he observed the aircraft descending and disappearing from view. From the flight profile he believed that the aircraft might have crashed and, therefore, made a radio call to Solent Coast Guard explaining that he might have just seen a small aircraft crash in the vicinity of Stokes Bay. The controller at the Solent Maritime Rescue Coordination Centre (MRCC) scrambled the Coast Guard helicopter and contacted the supervisor at the London Area Control Centre, who was unaware of the emergency.

The Coast Guard helicopter was tasked by Solent MRCC, at 1326 hrs, with conducting a search for the

crashed aircraft. The helicopter crew spotted the aircraft in trees on the golf course at 1331 hrs. Solent MRCC was informed of the sighting and the coast guard auxiliary shore based team were deployed to the crash site. The helicopter landed on the fairway and the winchman talked to the pilot and passenger who were both uninjured. Solent MRCC were informed that a medical transfer was not required and the helicopter left the scene at 1348 hrs.

Aircraft information

The Thruster T660N is a 3-axis microlight aircraft equipped with conventional controls. The pilot and passenger sit side-by-side and are provided with four-point safety harnesses. The aircraft fuel system consists of a 50 litre fuel tank and an electrical and mechanical fuel pump. The fuel quantity is established from a sight glass mounted in the cockpit. The accident aircraft was fitted with a four cylinder, air cooled, carburetted engine mounted on the keel tube forward and above the enclosed cockpit. In order to help stabilise the engine temperature a Perspex cover is fitted around the engine sump; some owners also fit insulation around the sump and oil filter. Carburettor heat is provided by engine oil which is fed through a jacket around the induction pipe between the carburettor and engine. The aircraft was equipped with a handheld radio integrated into the intercom system, which was connected to the pilot's and passenger's headset and boom microphone.

The pilot normally planned on a fuel consumption of 10 to 12 litres/hr. It is believed that the aircraft had last been refuelled with Mogas obtained from a garage forecourt.

Meteorological information

An aftercast for the time of the accident reported a weak ridge of high pressure covering southern England with a light south westerly flow over the Lee-on-Solent area.

Data from a radiosonde ascent for Herstmonceux, which the Met Office assessed as being broadly representative of the airmass affecting Lee-on-Solent at the time of the accident, reported the following conditions:

Height AMSL (ft)	Temperature (°C)	Dew Point (°C)	Humidity (%)
2,000	7.8	3.2	73
3,000	6.9	-5.4	41
4,000	5.2	-8.8	36

The CAA carburettor icing prediction chart indicates that with these conditions there would have been a risk of light icing during the cruise or descent at 3,000 ft and a serious risk of icing at any power setting at 2,000 ft.

Aircraft damage

The crash resulted in the aircraft being suspended in a tree with one wing touching the ground. The aircraft was dismantled the following day and moved to a maintenance organisation where a detailed damage assessment was carried out. The engineer who dismantled the aircraft was not aware of the actual fuel contents, but stated that there was no evidence of fuel having leaked out of the fuel tank and gained the impression that the fuel tank was empty.

The major damage to the aircraft was to the wings and tail plane with the cockpit remaining intact. There was some impact damage to the propeller, which another engineer, who undertook the damage assessment, believed indicated that it was not rotating when it struck the tree. He also noted that the fuel tank, which was still intact, was empty. This engineer could find no obvious external damage to the engine, which rotated freely when turned over by hand, and reported that the Perspex cover around the engine oil sump was in place. There was no evidence of additional insulation having been fitted to the engine.

The engine was returned to a maintenance organisation who undertook a 1,000 hour top end overhaul. The strip down revealed no mechanical failure or obvious reason why the engine should have stopped.

Comments

No detailed fault diagnosis of the engine or aircraft systems had been undertaken to determine the cause of the engine failure. The inspection of the aircraft and engine revealed no mechanical failure or obvious reason why the engine should have stopped. There was also no record of any previous engine problems in the engine log book and the pilot was unaware of any recent problems with either the engine or aircraft fuel system.

The total flight time on the day of the accident was approximately 65 minutes which, using the pilot's fuel consumption figure, would have required around 13 litres of fuel. This was confirmed by reference to the published data for the engine, and in discussion with another flying school. Therefore unless there had been a fuel leak there would have been sufficient fuel on board to complete the flight. Without a fuel sample it was not possible to eliminate the possibility of fuel contamination.

The engine on the aircraft was equipped with a carburettor heater which utilised warm engine oil to prevent the build up of ice in the induction pipe between the carburettor and engine. The engine on the Thruster is open to the elements and is known to cool quickly. It is also known that an engine is most vulnerable to carburettor icing when it is operating at a low power setting. The pilot described a glide descent from 4,000 ft to 2,000 ft during which the engine started to run roughly. The weather

at the time was conducive to carburettor icing and it is possible that the engine temperature had dropped sufficiently such that the engine oil was not warm enough to prevent the build up of carburettor icing. CAA Safety Sense Leaflets 4 and 14 also warn of the increased risk of carburettor icing when operating on Mogas. Whilst carburettor icing can neither be ruled in nor out, this accident serves as a reminder that carburettor icing can occur even on engines equipped with oil fed carburettor heaters.

Faced with an engine failure and a potential ditching in the Solent the pilot transmitted a 'Mayday' message to Solent Radar. However, neither Solent Radar nor any other aircraft operating in the area heard the full 'Mayday' message and consequently they were unable to identify the position of the aircraft. It was Solent Coast Guard, following reports from the yachtsman and helicopter crew, who eventually established the location of the crash site. Although the first abbreviated 'Mayday' message was heard by a number of aircraft, a replay of the recording of the transmission tapes confirms that the controller at Solent Radar did not receive this 'Mayday' call. However, he did hear the second abbreviated 'Mayday' call which would have been made when the aircraft was at a much lower height. This suggests that when the pilot made the first of these 'Mayday' calls, the aircraft had been at a height sufficient to communicate with Solent Radar. Assuming that the pilot kept the transmit button pressed long enough for him to pass his message, the evidence suggests that either there was a fault in the radio installation, or the quality of the installation was such that it severely limited the range at which the transmissions could be detected.