

ACCIDENT

Aircraft Type and Registration:	Socata TB10 Tobago, G-POPI	
No & Type of Engines:	1 Lycoming O-360-A1AD piston engine	
Year of Manufacture:	1982 (Serial no: 315)	
Date & Time (UTC):	17 June 2014 at 1600 hrs	
Location:	Field east of Guernsey Airport	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - 1
Injuries:	Crew - 1 (Minor)	Passengers - 1 (Serious)
Nature of Damage:	Aircraft destroyed	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	59 years	
Commander's Flying Experience:	817 hours (of which 751 were on type) Last 90 days - 20 hours Last 28 days - 4 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and additional enquiries by the AAIB	

Synopsis

The aircraft was departed Guernsey on a flight to Norfolk. Whilst climbing, smoke was detected in the cabin which became 'rapidly choking' and thicker such that visibility reduced significantly. The pilot shut down the engine and turned towards the airport, intending to make a forced landing there. The aircraft struck a disused greenhouse approximately 0.5 nm short of the runway and the passenger suffered a serious back injury.

An engine exhaust pipe had fractured and the hot gases had burnt the glass-fibre cowling.

History of the flight

The aircraft was preparing to depart Guernsey Airport using Runway 09 for a flight to Seething Airfield, near Norwich, from which it had arrived earlier that day. The takeoff and climb were normal and the pilot concentrated on climbing straight ahead to 1,500 ft whilst his passenger took photographs. Upon reaching 1,500 ft, he turned the aircraft towards the ORTAC reporting point and was approximately above Fermain Bay, south of St. Peter Port when he and his passenger noticed a faint burning smell.

There followed a sudden ingress of large quantities of smoke into the cabin from the pilot's footwell. He immediately turned left back towards the airport and declared an emergency to Guernsey ATC, intending to land on Runway 27.

As he rolled out of the turn, the smoke was restricting his vision but he was confident that the airport was ahead. However, the smoke became very thick and choking and the pilot suspected that he had an uncontrollable engine fire, so shut the engine down using only the ignition keys which he located by feel. By now he was concerned about becoming asphyxiated by the smoke but was reluctant to open the 'gull wing' doors believing that they could cause seriously disturbed airflow and consequent handling problems. He recalled a brief conversation with ATC in which he corrected their misapprehension that he was joining downwind for Runway 09 but did not remember any further communications.

In the absence of any visual references outside the cockpit and unable to see the instruments, the pilot tried to maintain a steady glidepath on a straight-ahead track, in the hope that it would eventually terminate somewhere on the airfield. The smoke cleared slightly and he saw in his peripheral vision to the left that the aircraft was below 100 ft and impact was imminent. Looking up, he saw tree branches ahead and pulled back on the control yoke in the hope that the aircraft would land belly-first into the trees; impact occurred shortly afterwards, approximately 0.5 nm short of the runway.

The pilot sustained an injury above his right eye and enquired after his passenger, who said her back was injured. The aircraft was suspended above ground in a nose-down and slightly left-wing-low attitude inside a disused and heavily overgrown commercial greenhouse. The pilot was concerned about fuel leaking from the ruptured wing tanks and told his passenger that they must exit the aircraft immediately. They did so through the pilot's door and exited the greenhouse and thick foliage with the assistance of others on the ground who had come to assist. They were then taken to hospital.

The passenger had sustained serious injuries to several vertebrae and was airlifted to Norwich for surgery.



Figure 1

G-POPI after being laid on the ground and foliage cleared to assist recovery.
Note remains of the disused greenhouse to the left

Examination of the wreckage

A local maintenance organisation examined the aircraft and prepared a report, which was made available to the AAIB. It identified an area of severe burning on the lower left side of the glass-fibre engine cowling (Figure 2) and scorching of the metal forward fuselage structure. The left side of the engine firewall was also scorched and, whilst the firewall itself had remained intact, a seal around the nosewheel steering linkage where it passed through it had been badly heat-affected and had probably allowed the smoke to enter the cabin.



Figure 2

Lower left side of engine cowling showing burning of glass-fibre construction

The No 4 engine cylinder exhaust downpipe had fractured at the clamp where it joins the exhaust muffler (Figure 3). Since the other end of the pipe allows movement should this occur, the end of the pipe was free to move away from its normal position and allowed hot exhaust gasses to flow unrestricted into the cowling.

The exhaust system and muffler are visually inspected every 50 flying hours or 6 months according to the Light Aircraft Maintenance Programme (LAMP). The condition of the fracture suggests that it had started as a crack which developed over a considerable period of time, but its location, effectively inside the clamp, would render it very difficult to see without dismantling the joint.

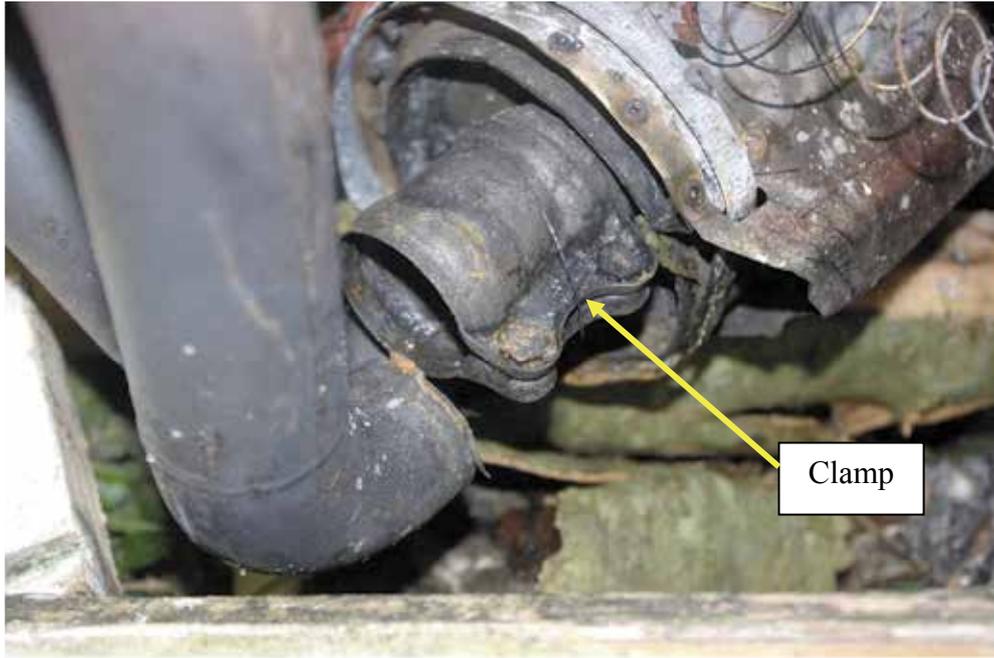


Figure 3

Fracture of No 4 cylinder exhaust downpipe where it attaches to exhaust muffler