ACCIDENT

Aircraft Type and Registration:	Spezio DAL-1, G-NOBI
No & Type of Engines:	1 Continental Motors C125-2 piston engine
Year of Manufacture:	1970
Date & Time (UTC):	21 April 2007 at 1300 hrs
Location:	Nayland Airfield, Essex
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - 1 (Serious) Passengers - N/A
Nature of Damage:	Damage to landing gear, lower fuselage and both wing leading edges
Commander's Licence:	Private Pilot's Licence
Commander's Age:	52 years
Commander's Flying Experience:	400 hours Last 90 days - Not known Last 28 days - 1 hour
Information Source:	Aircraft Accident Report Form submitted by the pilot and AAIB enquiries

Synopsis

During the approach, the engine started to run roughly and the aircraft failed to reach the airfield. In the subsequent final approach for the forced landing, the pilot reported the speed becoming too low, and the elevator response being less than expected as he commenced the flare. The aircraft landed heavily, and in doing so the landing gear became detached and the pilot suffered a severe compression fracture to a vertebra, which required hospitalisation.

Whilst not conclusive, the most likely reason for the rough running of the engine was the continued selection of carburettor heat during the approach. This, combined with the engine mixture being set to rich, probably caused the engine to run excessively rich and, to eventually, to run roughly. The pilot's lack of experience on type was considered a factor in the subsequent forced landing.

History of the flight

This was the pilot's first solo flight in this aircraft type. The takeoff and flight up to the first approach had been uneventful, and the pilot reported selecting carburettor heat as required and without incident. He then made an approach to Runway 32, which he subsequently rejected because he felt that the approach was too fast and too flat.

The engine responded normally to the pilot's full-throttle input and the aircraft climbed and commenced another circuit. When the aircraft was on the down wind leg, and with the carburettor heat on, the engine was throttled back. It then started to run roughly and some dark smoke started coming out of the cowling. The pilot applied full throttle but the engine did not respond normally and the aircraft failed to climb. The pilot now doubted that he could land on Runway 32, which has power cables just before the threshold. He was also concerned that the smoke indicated an engine fire. He elected to land in a large field that was short of Runway 32 and he therefore made a turn of approximately 90° to the left. Prior to landing he switched off the fuel and magnetos. In the subsequent final approach to the field, the pilot reported the speed became too low, and the elevator response was less than expected as he commenced the flare. The aircraft landed heavily, and in doing so the landing gear became detached. The harness remained secure; however the pilot suffered a severe compression fracture to a vertebra which required hospitalisation. Subsequent examination of the aircraft showed that there was no evidence of a fire, either in flight or after the forced landing.

Aircraft information

The Spezio DAL-1 is a single-engined, home-built aircraft and G-NOBI was fitted with a Continental C125-2 engine. It is a two-seat, low-wing monoplane with two cockpits arranged in tandem and with a tail-wheel landing gear, see Figure 1. As a result of the tandem cockpit layout it is sometime referred to as the 'Spezio Tuholer'. The aircraft has conventional primary flying controls but does not have flaps. Flight controls were fitted in both cockpits although the fuel management controls were only fitted to the rear cockpit.

Figure 1

Photograph of G-NOBI
(reproduced with permission of Tom Cole)

Airfield information

Nayland has two grass runways: Runway 14/32 and Runway 13/31. The gradient of the field is such that it is common practice for aircraft to take off on Runway 13 or 14, and to land on Runway 32, the latter having a steep upslope.

Meteorological information – possibility of carburettor icing

The Met Office supplied an aftercast for the airfield at the time of the accident and this included the information contained in Table 1 below.

It can be seen that there was a tailwind component on Runway 32.

By reference to a standard chart for carburettor icing, the temperature, dew point and humidity were such that carburettor icing at glide power was possible.

Discussion

Since the pilot had the carburettor heat selected for the circuit, and it remained selected when he opened the throttle, it is unlikely that carburettor icing was a problem.

Whilst not conclusive, the most likely reason for the rough running of the engine was the continued selection of carburettor heat during the approach. This, combined with the engine mixture being set to rich, probably caused the engine to run excessively rich and to emit some smoke. It is normal practice for carburettor heat to be selected to cold during the final approach so that if maximum power is required for a go-around, then the engine is correctly configured. This procedure does not appear to have been carried out during this approach.

The possibility of an undiagnosed technical problem with the engine, perhaps with the fuel system, still remains. The aircraft has since been shipped abroad, and several months after the accident the aircraft was still awaiting repair, and no inspection of the engine had been undertaken. However, there were no obvious defects reported by the new owner.

Whilst the pilot had experience of several tail-wheel types, his lack of experience on this type would appear to be a factor in the heavy subsequent landing. The long nose ahead of the rear cockpit might also have been a contributing factor.

Height AGL	Wind Speed & Direction	Temperature	Dew Point	Humidity
Surface	160/06 kt	15.0	4.4	49%
1,000 ft	190/15 kt	9.3	1.2	57%

Table 1