Cessna F150L, G-AZLY

AAIB Bulletin No: 1/2002	**Ref: EW/G2001/05/24**	**Category: 1.3**
INCIDENT		
Aircraft Type and Registration:	Cessna F150L, G-AZLY	
No & Type of Engines:	1 Continental Motors O-200-A piston engine	
Year of Manufacture:	1972	
Date & Time (UTC):	23 May 2001 at 1510 hrs	
Location:	High West Farm, near Shildon, Durham	
Type of Flight:	Training	
Persons on Board:	Crew - 2	Passengers - None
Injuries:	Crew - None	Passengers N/A
Nature of Damage:	None	
Commander's Licence:	Basic Commercial Pilots Licence	
Commander's Age:	58 years	
Commander's Flying Experience:	2,805 hours (of which 2,125 were on type)	
	Last 90 days - 195 hours	
	Last 28 days - 74 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

History of the flight

The aircraft had departed Teesside, with an instructor and student onboard, for a planned one hour flight to revise emergency drills and procedures. The aircraft had already made two flights earlier in the day without any problems.

After demonstrating the procedures to be followed in the event of an engine fire, at an altitude of about 2,500 feet amsl the instructor selected carburettor heat, reduced engine power and asked the student to carry out a practice force landing. Having selected a suitable field, the student conducted the necessary cockpit checks and rehearsed a 'Mayday' call. The engine was warmed twice during the descent and after turning onto the final approach 10° of flap was extended. The instructor judged the exercise to be successful and so called for an early go-around to avoid getting too close to rising ground in the vicinity. The student applied full power and started to climb away. However, after a few seconds and without any warning, the engine suddenly lost power.

The instructor took control and checked the fuel, mixture and carburettor heat, which were set correctly. The aircraft was re-established in the glide, still with the 10° flap setting, and another field was selected. A brief radio transmission was made to the Teesside Radar controller informing him of the intended forced landing. Both harnesses were checked for tightness before the aircraft touched down in a field of wheat. The crop was short and the ground was dry, allowing full braking to be used. An up-slope provided additional retardation and enabled the aircraft to be brought to a halt short of a fence that bordered the field. The aircraft was undamaged and the occupants sustained no injuries. The emergency services had been alerted by Teesside Air Traffic Control and were quickly on the scene, after the Teesside-based Police Support aircraft provided assistance in locating the landing site.

Examination of the engine

Subsequent examination of the engine revealed that both valves in the front left cylinder had failed and fragments of the valves had become embedded in the piston. The Chief Engineer of the maintenance organisation that examined the engine considered that one valve head had detached following a failure in the stem radius and that this valve head subsequently struck the remaining valve head, inducing its failure. He commented that, in his experience, such valve failures were rare and random events that could occur at any time during the life of an engine. Such failures were usually the result of bending fatigue caused by a carbon build-up under the valve seat and/or wear in the valve guides.

It was also found that the rear left cylinder was developing very low compression due to a burnt exhaust valve. It was considered probable that this condition had existed for some time. The engine had achieved more than 1,800 hours since its last overhaul and was approaching its next 50 hour inspection, which would have allowed an opportunity for its condition to be addressed. The engine overhaul life of 1,800 hours can be extended by 20% subject to satisfactory compression checks and oil consumption levels. Nevertheless, in normal circumstances this cylinder would still have developed a significant amount of power.