

Pitts S-1S, G-BKDR

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Aircraft Type and Registration:	Pitts S-1S, G-BKDR
No & Type of Engines:	1 Lycoming IO-360-B4A piston engine
Year of Manufacture:	1982
Date & Time (UTC):	8 November 1996 at 1240 hrs
Location:	North of Lewknor, Oxfordshire
Type of Flight:	Private
Persons on Board:	Crew - 1 - Passengers - None
Injuries:	Crew - None - Passengers - N/A
Nature of Damage:	Crushed fin & rudder, broken ribs & cracked spar in top wing, propeller spinner crushed and various other minor damage areas
Commander's Licence:	Private Pilot's Licence
Commander's Age:	37 years
Commander's Flying Experience:	551 hours (of which 208 were on type) Last 90 days - 6 hours Last 28 days - 1 hour
Information Source:	Aircraft Accident Report Form submitted by the pilot. Telephone enquiries of maintenance and component overhaul companies

The pilot reported that he carried out a pre-flight inspection of the aircraft, including a careful check of the fuel level. He confirmed that 11 gallons were on board.

The engine was then started without difficulty and pre-flight power checks were normal. The engine appeared to be producing full power during the take off, and the aircraft departed the White-Waltham circuit to the north. During the transit the pilot carried out a series of aerobatic manoeuvres and a period of inverted flight. On arriving in his chosen manoeuvring area, he carried out further aerobatics before embarking on a series of tail-slides. In each case he throttled back just before each slide and on recovery from the fourth or fifth slide the engine failed to respond to the opening of the throttle. The pilot set the aircraft in the glide at approximately 2,000 feet whilst the

attempted to identify the landing strip at Moor Court Farm; he noted that the engine still appeared to be running smoothly, but was behaving as though the throttle was closed. Exercising the throttle lever slowly several times had no effect.

Having failed to find the strip at Moor Court Farm the pilot transmitted a number of Mayday calls on the White Waltham Frequency (part of one being relayed by another aircraft) and set up an approach into wind at a large flat field with a clear approach. When the pilot was certain of clearing the road bordering the field he turned off the magnetos and the fuel. The propeller stopped in a near vertical position.

On touch down the main-wheels rapidly sank in the soft ground and the pilot was unable to keep the tail down. The lower propeller blade dug into the ground and the aircraft turned over. The pilot was able to exit from the aircraft unaided.

During subsequent investigations the fuel injector unit was put on a test rig. On raising the operating pressure to the region of the working figure, fuel was seen to be spraying out of the unit, much of it via the area of a worn bush.

In order for fuel to be present in the area behind this bush, the diaphragm must have been punctured. Closer examination of the unit revealed that it was of a very early modification standard and thus could not have been the subject of an overhaul for many years. The diaphragm must therefore have been unusually old. A number of defects were noted on the unit and it was considered to be incapable of economic repair. It was therefore not subjected to further examination but was returned to the owners so that it could be part-exchanged for a new unit.

The manufacturers of the Lycoming engine types recommend that engines over 12 years old should be subjected to overhaul regardless of the number of hours flown. This is presumed to apply to ancillaries as well as to the basic engine. The available evidence indicated that no strip examination or diaphragm replacement had been carried out on this injector unit for a period well in excess of this figure.