AAIB Bulletin No: 4/2000 **Ref: EW/C99/07/13** **Category: 1.3**

Aircraft Type and Registration:	Pitts Special, N80BA
No & Type of Engines:	1 Lycoming O-360-B1B piston engine
Year of Manufacture:	1987
Date & Time (UTC):	11 July 1999 at 1330 hrs
Location:	Near Newtownards Airport, Northern Ireland
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - Serious Passengers - N/A
Nature of Damage:	Very extensive, with wings torn from fuselage and engine pushed sidewards
Commander's Licence:	Private Pilot's Licence
Commander's Age:	65 years
Commander's Flying Experience:	800 hours (of which 60 were on type) Last 90 days – Not known Last 28 days – Not known
Information Source:	AAIB Field Investigation

The pilot had departed from Newtownards airfield and flown south for about 10 miles before engaging in some aerobatics practice. This included slow rolls, climbing rolls and barrel rolls.

On return to Newtownards the pilot descended to 1200 feet and throttled back to 1500 RPM, at which point the engine stopped immediately. The pilot contacted Newtownards and then set up for an emergency landing, choosing to land on a hill rather than in the sea, but at his high descent rate his choice of landing sites was very limited. He reduced speed to 68 kt on final approach but the aircraft stalled and the right wing dropped into a hedge, spinning the aircraft around. The fuel tank ruptured, covering the pilot with fuel, but he was able to drop out of the open cockpit and crawl away from the aircraft. There was no fire but the pilot was admitted to hospital.

When the aircraft was examined, there was no evident cause of the engine stoppage. However, the engine had experienced a previous stoppage and the carburettor (Bendix Pressure Carburettor, model PSH-BBD) had been sent, in February 1999, to an overhaul agency for examination and testing. Initial flow testing of the carburettor had shown flow rates below the allowable range in all conditions

so the carburettor had been recalibrated, wire locked and returned for re-installation in N80BA. It was noted by the overhaul agency to the customer at the time that the carburettor had last been overhauled in October 1977 and thus the seals and gaskets were of the type prone to age hardening, rather than of the later material which is more resistant to this process.

Following the accident in July 1999, the carburettor was removed from the aircraft and taken by the AAIB to an overhaul agency for examination. Impact damage ruled out a flow test of the unit but it was stripped and examined in detail. This examination showed that the carburettor had been correctly assembled, that the seals and diaphragms were intact and there were no defects apparent likely to have caused an engine stoppage on their own. The various internal diaphragms had become stiffer with age. Without a flow test, however, the possibility of an engine stoppage under conditions of, say, mild carburettor icing could not be assessed.

The normal maximum time between overhauls (TBO) for this model of engine is specified as 2,000 hours. However, Service Instruction No 1009AN from Textron Lycoming states that, for engines not accumulating this number of hours, an overhaul is recommended in the 12th calendar year. An overhaul of the carburettor would normally take place at the same time.