

Piper PA-28-161 Warrior II, G-BNXX

AAIB Bulletin No: 12/2004	Ref: EW/G2004/09/06	Category: 1.3
INCIDENT		
Aircraft Type and Registration:	Piper PA-28-161 Warrior II, G-BNXX	
No & Type of Engines:	1 Lycoming O-320-D3G piston engine	
Year of Manufacture:	1981	
Date & Time (UTC):	8 September 2004 at 1012 hrs	
Location:	Coventry	
Type of Flight:	Training	
Persons on Board:	Crew - 2	Passengers - None
Injuries:	Crew - None	Passengers - N/A
Nature of Damage:	Fire damage to the engine, engine accessories and cowlings	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	68 years	
Commander's Flying Experience:	4,498 hours (of which 300 were on type)	
	Last 90 days - 35 hours	
	Last 28 days - 17 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

History of flight

The intention of the flight was for the re-validation of an IMC rating. The commander was a CAA PPL Examiner, but the pilot who was renewing his IMC rating was handling the aircraft at the time of the accident, and will be referred to as the pilot in this report.

The handling pilot had carried out a walk round of the aircraft, with particular attention to the engine, as this had only been replaced about four flying hours previously. The check did not reveal any problems or signs of fluid leakage and, after a normal engine start, the aircraft was taxied to the run-up area. Engine run checks, with fuel supplied from both the left and right fuel tanks, were uneventful and showed the engine to be operating correctly at this point.

The takeoff was to be from Runway 05, which required the aircraft to backtrack the runway for about 8 km, before turning through 180° and lining up on the runway centre line. The taxi was uneventful, but while the pilot was turning the aircraft, the engine suddenly stopped. The pilot immediately attempted a restart, using the hot engine start procedure, but was unsuccessful. He tried a second,

unsuccessful, attempt after which the controllers in the tower informed the crew that they could see flames emitting from and around their engine. This was not evident to either of the pilots, but the commander ordered an evacuation and both exited via the cockpit door. The airfield fire service was already en-route to the aircraft and on arrival they extinguished the fire.

Engine Examination

After the accident, the aircraft was inspected at a local maintenance facility. The fire had been concentrated around the carburettor heat box, with subsequent fire and heat damage to the lower engine cowlings and the components mounted on the rear of the engine. There was neither evidence of fuel leakage, nor were there any loose fuel connections or split fuel supply lines in the engine compartment. A test of the fuel system, with the fuel pumps operating, was satisfactorily carried out and showed that fuel was flowing freely, with no evidence of any leakage. The engine was also free to turn, and the spark plugs indicated that the fuel/air mixture was correctly set.

Discussion

The engine fire was concentrated around the carburettor heat box and, as this is located directly below the carburettor, this would suggest that the fire had started because of fuel dripping from the carburettor. When the throttle is advanced, the accelerator pump normally injects a small amount of fuel into the venturi of the carburettor, but this relies on airflow to then move the fuel upwards and into the engine. Without this airflow, as would be the case with the engine stopped, the fuel would tend to drip down and pool in the carburettor heat box.

It is therefore possible that during the attempted engine restart, excess fuel pooled in the carburettor heat box. The heat from the hot exhaust system could then have provided the ignition source of the fuel vapour.

The reason for the engine stoppage was not ascertained. At some point, in the future, the maintenance organisation intends to rebuild and test the engine. If this reveals any significant reason for the engine stoppage, or indeed the fire, this will be reported on in a later bulletin.