

AAIB Bulletin No: 9/93

Ref: EW/G93/07/03

Category: 1c

Aircraft Type and Registration: ARV1 Super 2, G-BPMX

No & Type of Engines: 1 Hewland 3-044D piston engine

Year of Manufacture: 1986

Date & Time (UTC): 3 July 1993 at 1505 hrs

Location: 2 miles north of Wigan, Lancashire

Type of Flight: Private

Persons on Board: Crew - 1 Passengers - 1

Injuries: Crew - None Passengers - None

Nature of Damage: Engine seized, damage to landing gear and empennage

Commander's Licence: Private Pilot's Licence

Commander's Age: 27 years

Commander's Flying Experience: 110 hours (of which 29 were on type)
Last 90 days - 6 hours
Last 28 days - 2 hours

Information Source: Aircraft Accident Report Form submitted by the pilot,
and telephone inquiries to repair organisation

The aircraft departed Barton for a local flight and had climbed to a cruising height of 1,500 feet agl without any indications of abnormality.

Some 25 minutes into the flight, the engine RPM decayed from the cruise setting of 5,400 to about 5,000 RPM. The pilot initially attributed this to an unintentional movement of the throttle during light turbulence, and moved the throttle forward slightly to bring the RPM back to 5,400. However, the RPM recovered only briefly before decreasing again. The pilot then applied full throttle, which produced only a temporary increase in power before the RPM again decayed.

By this stage, the engine was running noticeably roughly and the pilot decided that he should prepare for a forced landing rather than attempt a return to Barton, which was some 10 to 15 nm distant. Having selected a suitably orientated field, he transmitted a 'MAYDAY' call on the Barton frequency and set up his approach. Whilst manoeuvring onto the base leg, a loud 'bang' came from the engine and the propeller stopped instantly.

The glide approach was continued at 65 kt, with 25° of flap being selected on final approach. The aircraft touched down rather heavily at the threshold of the chosen field, but the landing otherwise appeared normal. After applying the brakes to bring the aircraft to a halt, the fuel was turned off and both occupants evacuated the aircraft without difficulty. Once outside the aircraft, it became evident that the main landing gear and landing gear attachments had suffered some damage during the landing.

The aircraft was recovered to a local maintenance and repair facility, where the engine was strip examined. The engineer reported that the No 3 (rear) piston had broken up and the No 3 connecting rod had overheated and seized onto the crankshaft. The cause of the seizure could not be determined. Prior to the flight, 21.1 litres of Avgas were mixed with a half litre of two stroke oil before being added to the fuel tank, which was then 'slightly short of a full tank'. The spark plugs had a normal appearance, the carburettor rubber choke tube barrels were tight and intact, no evidence was found to suggest an abnormally weak mixture on any cylinder, and the cooling system appeared to be working satisfactorily with coolant still present in the engine.

The Hewland engine has a nominal overhaul life of 600 hours. However, G-BPMX was operating on a PFA permit to fly with the engine being subject to *on condition* inspections. Both aircraft and engine had accumulated some 811 hours total at the time of the accident, with no prior history of engine problems.