Europa Classic, G-MAVE

AAIB Bulletin No: 12/98 **Ref: EW/G98/07/34** **Category: 1.3**

Aircraft Type and Registration:	Europa Classic, G-MAVE
No & Type of Engines:	1 Subaru EA81 piston engine
Year of Manufacture:	1998
Date & Time (UTC):	25 July 1998 at 1126 hrs
Location:	Farthing Corner Airfield, Kent
Type of Flight:	2 hour endurance test flight
Persons on Board:	Crew - 2 - Passengers - None
Injuries:	Crew - None - Passengers - N/A
Nature of Damage:	Aircraft destroyed
Commander's Licence:	Private Pilot's Licence with IMC Rating
Commander's Age:	53 years
Commander's Flying Experience:	973 hours (of which 300 were on type) Last 90 days - 53 hours Last 28 days - 11 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

The aircraft had been inspected by its prospective test pilot and another PFA Inspector on many occasions during its construction and was considered to have been built to a very high standard. The combination of the Subaru EA81 engine, a heavy duty battery, comprehensive set of instruments and leather clad interior placed the unladen weight at the top of the range of Europa weights, thus limiting the aircraft's potential range and payload.

Taxi trials were conducted at the end of June and during July and in the early trials the engine stopped on a number of occasions. The engine restarted after 10 to 15 seconds when hot. The fuel pressure regulator was adjusted to increase the fuel pressure from 3.5 to 4.0 psi initially and then up to 4.5 psi and carburettor heat applied. (This engine was fitted with an 'Ellison Throttle Body' - a simple form of single point fuel injection rather than the more common carburettor complete with

float chamber). The changes to the fuel pressure did not remove the tendency for the engine to stop. All engine temperature and pressure indications were noted to be remaining within limits but the oil temperature did occasionally increase towards the maximum.

Following consultation with the engine supplier the builder followed their recommendations to lag the engine bay fuel lines with 'Thermowrap' insulation in addition to the Aeroquip protection and to change from MOGAS to AVGAS. After a total of 1 hour 55 minutes of taxi trials, the last half hour of which had been uneventful, it was decided to undertake take offs and landings along the length of Lydd Airport main runway. After these successful short hops, short flights were completed totalling 2 hours before the aircraft was positioned to Laddingford Aerodrome for its two hour endurance flight.

At take off with two occupants the aircraft was at the MTWA and carrying enough fuel for 2 hours 30 minutes of flight. After flying around over Kent for about 1 hour 30 minutes some rough running of the engine was noted at 4,000 RPM. Engine speed was increased to 4,500 RPM and carburettor heat selected after which the engine ran smoothly again. At a flight time of 1 hour and 45 minutes, at a height of 1,600 feet and following a rate one turn to the left, the engine stopped suddenly without warning. The fuel flow meter indicated 18.9 litres of fuel remaining. The auxiliary fuel tank was selected and the second, auxiliary fuel pump switched on. An unsuccessful restart was attempted.

A MAYDAY call was made on the Rochester Airport frequency (122.25 MHz), the aircraft was trimmed for the best glide speed and aligned with the extended centre-line of Farthing Corners Runway 24 (380 metres, grass) some two miles away. After lowering the landing gear and side slipping to lose height the aircraft crossed the threshold of Runway 24 at a height of about 10 feet but did not decelerate to achieve a touchdown until reaching the far end. The pilot considered two options; to aim through the hedge to miss visible tree trunks or to pull up and stall into the foliage of trees in a wood beyond the airfield - he chose the latter. The tail of the aircraft struck the tree branches and was torn off, the remainder of the aircraft fell backwards down from about 50 feet. The two occupants were uninjured and after switching off all systems vacated the aircraft without difficulty.

An examination of the aircraft the next day by two PFA Inspectors revealed at least 10 litres of fuel in the tank, enough for 30 minutes flight at fast cruising speed, but there was no fuel in the forward fuel lines. Post-accident investigation has centred on the fuel supply system; the non-standard gascolator fitted, the fuel filters, the fuel pressure regulator, the fuel tank and tank outlet positions but no defect to account for the engine stopping has been identified.