Out of fuel, spun in

THE PILOT OF a Jodel D112 had arranged to fly it to Epinal (France) for a weekend fly-in. His passenger did not hold a pilot's licence. They travelled in company with another aircraft.

On the Friday, the Jodel was flown from its base at Bourne Park, near Andover, to Popham Airfield (some fifteen minutes) to meet with the pilot of the other aircraft. No refuelling of the 112 took place at Popham. Both aircraft then departed for Le Touquet Airport.

Throughout the weekend the 112 was the lead aircraft of the pair. Both aircraft were equipped with handheld battery-powered GPS. A rudimentary paper-based flight plan was recovered from the wreckage. This had been prepared for the outbound flights to Epinal only. No paper flight planning documentation was recovered for the return.

The Jodel was refuelled at Le Touquet, then flew to Soissons, no refuelling taking place there. They continued to Brienne-le-Château, where the 112 uplifted fuel, then continued to Epinal, where the aircraft remained until the Sunday, the day of the accident. No refuelling took place at Epinal.

The first flight on the Sunday was from Epinal to Brienne-le-Château, which took the 112 about 65 minutes to complete. Forty litres of fuel were uplifted there, giving an average consumption of 19.2 litres per hour since the previous refuelling. The aircraft then flew to Abbeville, near the northern coast of France, which took around two hours flying time. At Abbeville, only 25 litres of fuel were uplifted, a quantity which, given the average fuel consumption calculated so far, would not have been sufficient to fill the fuel tank. It is estimated that the aircraft departed from Abbeville for Lydd with a maximum of 45 litres on board (or about three-quarters of a full tank, which held sixty litres).

The 112 arrived at Lydd at 1451 hours, with the accompanying aircraft landing some two minutes later. The flight time from Abbeville was about one hour. No refuelling took place at Lydd. It is estimated that the 112 left Lydd with a maximum of 25 litres of fuel on board.

Departure from Lydd was at 1537 hours. The intention was that the 112 would route to its base at Bourne Park, while the other aircraft routed to its base at Popham. The initial routings were the same. The other aircraft took off about one minute after the 112 and, unusually for this trip, took over as lead aircraft for the loose formation. Post flight analysis from the GPS of the other aircraft showed that it had achieved an average groundspeed of 75 knots, which is consistent with the normal cruise speed of the aircraft in the ambient wind conditions for the route. The GPS from

the 112 was severely disrupted in the impact and it proved impossible to retrieve any data from the unit.

When passing to the south-west of Oakhanger, around 1633, the Jodel flew ahead of the other aircraft and turned right towards the west of Alton. As the other aircraft passed over the A31 road between Four Marks and Alton at 2,000 feet cruise altitude, the Jodel turned away to the right and commenced a slow descent, turning to take it on a track to the east of Lasham Airfield. The two aircraft had been in radio contact on a discrete frequency during the flight. The last of these transmissions from the Jodel was just before it left the formation, but this transmission gave no apparent indication of any problem at that time.

Just before 1638, a Mayday call was transmitted from the 112 on the Distress frequency 121.5. The D&D Controller at the London Air Traffic Control Centre at West Drayton heard this. The call indicated that the aircraft had an engine failure, that it was about two miles south of Lasham and trying to put down in a field. The controller responded that he was scrambling the Search and Rescue helicopter, which was acknowledged by the pilot. No further transmissions were heard from the aircraft.

Eyewitnesses at Heathcroft Farm, Bentworth, saw the aircraft, with the propeller windmilling only slowly, gliding in a north-westerly direction over the farm towards an adjacent crop field. The aircraft was seen to begin a turn to the right, steadily turning through about 45° initially, but then the bank angle increased rapidly and the nose dropped towards the ground. The aircraft made about one complete rotation to the right and impacted the ground in a steep, nose-down attitude.

Both occupants were wearing lap and shoulder harnesses but sustained immediately fatal impact injuries.

There was no fire and eyewitnesses did not notice a strong smell of fuel on arrival at the accident site. The Mayday call occurred one hour after take-off from Lydd. At that time, it is estimated that the aircraft would have had no more than five litres of fuel on board, assuming that it had been absolutely full to sixty litres capacity on leaving Brienne-le-Château earlier that afternoon.

The aircraft had a valid Permit to Fly, issued by the PFA. During a test flight after its most recent maintenance inspection, the pilot recorded that the aircraft exhibited natural buffet at the onset of a stall at 33 knots, with the stall occurring at thirty knots. From the eyewitness evidence and inspection of the wreckage, it would appear that while the aircraft was gliding towards a forced landing location, it suffered a reduction in airspeed towards the stalling speed, to such an extent that it departed from controlled flight into an incipient spin with insufficient altitude in which to recover.

It was not possible to establish at what height control of the aircraft was lost, but the impact parameters suggest a height of at least 200 feet. Both seats were fitted with lap and diagonal inertia type seat harnesses. Each of the harnesses was buckled up, and the webbing and attachment points of each had survived. However, the nature of the impact and the extreme disruption of the cockpit rendered the harnesses ineffective.

No fuel residues were present in the fuel tank, consistent with an empty fuel tank at impact. (It is usual for creases and folds in the tank walls, made during the impact, to create pockets which retain residual quantities of any fuel present in the tank.)

The fuel quantity indicator was a direct-reading type comprising a cork float mounted on the end of a thin brass rod, marked at intervals along its length, which passed vertically into the tank through a short sleeve in the filler cap. Approximately 80 mm had broken from the top of the top end of the rod at some time in the past, and the remaining end had been bent at right angles to prevent it from dropping right down into the tank. As a consequence, the bottom quarter of the float's original travel was unavailable. It is not known whether the owner-pilot had re-bent the rod, or whether he was even aware that it had been done, or that the indicator would provide a false high reading at fuel levels below five litres. The fuel indicator rod had been heavily deformed during the impact at a position consistent with it being at the bottom limit of its travel i.e. indicating five litres, and with five litres or less of fuel actually in the tank.

No fuel residues were found in the carburettor bowl or the accelerator pump, and it is significant that there was very little scope for leakage or evaporation of fuel from these areas prior to inspection.