No: 4/89 **Ref: EW/G88/10/06** **Category: 1c**

Aircraft Type and Registration:	Mooney M20J, G-BJHB
No & Type of Engines:	1 Lycoming IO-360-A3B6D
Year of Manufacture:	1981
Date and Time (UTC):	3 October 1988 at 0703 hrs
Location:	Bonvelles Farm, North Benfleet, Essex
Type of Flight:	Training
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Damage to the propeller, underside of fuselage and right wing tip
Commander's Licence:	Private Pilot's Licence with Instrument and Night ratings
Commander's Age:	64 years
Commander's Total Flying Experience:	1085 hours (of which 50 were on type)
Information Source:	Aircraft Accident Report Form submitted by the pilot and AAIB enquiries

The pilot was undertaking an early morning flight from Wycombe Air Park to Southend Airport. Before departure he obtained the 0550 hrs weather for Southend, which was: visibility 1600m in mist, cloud 4 oktas at 300 ft and 4 octas at 4500 ft. He concluded that an approach to Southend would present no undue difficulties. The aircraft left Wycombe with sufficient fuel to carry out two approaches at Southend followed by a diversion, if required, to an Instrument Landing System (ILS) equipped alternate airfield.

After full pre-flight checks and a normal take-off, the aircraft departed to the east. Shortly before arriving abeam the Chiltern Non-Directional Beacon (NDB), the aircraft entered Instrument Meteorological Conditions (IMC) at an altitude of 2000 ft. After receiving a heading to steer for Southend from Thames Radar the pilot noticed that the high/low voltage warning light was flashing. After changing frequency to Southend ATC he established that the weather was the same as at 0550 hrs. Following a turn onto 080°, in accordance with a request from Southend ATC for identification purposes, he informed the controller that he had an electrical problem, and asked the controller if there was an electrician on the airfield. The controller replied that he did not know.

The pilot then followed the controller's instructions for a Surveillance Radar Approach to runway 24, and declared a decision height of 350 ft. After descending to 325 ft, he initiated a "go-around", raised the landing gear and flaps, and climbed-out on the runway heading in order to join the hold at 3000 ft. After initiating a turn to the right, the pilot noticed that the Automatic Direction Finding (ADF) pointer was not responding and that the lights on the ADF and NAV 2 indicators had gone out, followed shortly by the remainder of the panel lights. The pilot reported that he quickly realised the full implications of his situation and decided to descend, rolling-out on to a northerly heading. At approximately 1000 ft QNH, he flew into visual meteorological conditions (VMC) conditions over water, but could not identify his position. Flying to the north, he saw some open fields, by which time he had descended to a lower altitude in order to remain in VMC. The pilot stated that he then observed the fuel gauges registering "zero". Due to his anxiety, he did not realise that this was as a result of the electrical problem and thought that he was short of fuel. In order to avoid what he thought would be an imminent involuntary landing, he elected to carry out an emergency landing. After making an approach to one field, which turned out to be obstructed by power lines, a landing was made in another ploughed field, with the landing gear retracted and the engine at idle. The pilot was uninjured and was able to make his escape unaided.

Some five hours after the accident, the aircraft was examined by several co-owners, who reported that the battery would only support the radios for some 15 minutes, before running-down.

Examination of the aircraft's electrical system at a later date by the repair organisation, revealed the alternator to be defective in that there was a broken wire to one of the brushes. After brush replacement and repair of the wire, the alternator was tested satisfactorily to the manufacturer's specification. The aircraft, which had been imported from the USA in 1983, had accumulated a total flying time of 905 hours.