No: 11/86 **Ref: 1c**

Aircraft type and registration:	Pierre Robin HR100/250TR G-BFJI
No & Type of engines:	1 Lycoming IO-540-C4B5 piston engine
Year of Manufacture:	1977
Date and time (UTC):	1 September 1986 at 1355 hrs
Location:	Southend Airport
Type of flight:	Private (Business)
Persons on board:	Crew — 1 Passengers — 2
Injuries:	Crew — None Passengers — None
Nature of damage:	Damage to propeller; engine shock loaded. Slight damage to fuselage underside.
Commander's Licence:	Private Pilot's Licence
Commander's Age:	41 years
Commander's Total Flying Experience:	607 hours (of which 152 were on type)
Information Source:	Aircraft Accident Report Form submitted by the pilot and subsequent AIB enquiries

The pilot filed a VFR flight plan from Gerona to Southend with Le Touquet as the alternate airfield.

On performing the pre-flight checks, the pilot observed that the battery voltage was not indicating, and subsequently, the engine could not be turned over on the starter motor. Help was summoned and the aircraft was eventually started with the aid of an external battery. The aircraft voltmeter then registered 14 volts, although the pilot recalled that the ammeter did not indicate a high charge rate, as he would have expected.

The aircraft took off and the flight proceeded uneventfully until, some 40 miles south of Chateaudun, a complete electrical failure occurred. After turning off the alternator and master switches, the pilot then flew visually with the intention of landing at Le Touquet. Sometime later, the pilot reset the alternator and master switches and all the electrical services, with the exception of the DME, became available once more. The pilot decided to revert to his original plan and continue to Southend.

The flight proceeded normally once again, and, having cleared Kent Radar at Faversham, was transferred to Southend. The aircraft was cleared to join left base for Runway 24. A short time later, the pilot observed that the electrics had failed again, and prepared for a flapless landing, believing he had already selected the landing gear down. (The flaps are electrically actuated, and the landing gear is electro-hydraulically operated on this aircraft.) In fact, the landing gear was still in the up position, and Southend ATC were unsuccessful in their attempts to alert the pilot due to the electrical failure rendering the aircraft radio inoperative.

The aircraft alighted on the centreline of the runway, damaging the propeller and causing light damage to the fuselage underside. The occupants evacuated the aircraft without injury.

After the accident, it was found that the battery was completely discharged. Subsequent tests on the voltage regulator revealed that it became erratic under certain combinations of rpm and current load, and could not be adjusted to the required voltage.

The pilot commented that, with the benefit of hindsight, it would have been prudent to have pulled the landing gear emergency release lever, having become aware of the electrical failure that occurred in the Southend circuit. This would have ensured that the gear was down, as the emergency system is not electrically operated.