

Cessna F177RG, G-AYSY

AAIB Bulletin No: 12/98 **Ref:** EW/G98/07/15 **Category:** 1.3

Aircraft Type and Registration: Cessna F177RG, G-AYSY

No & Type of Engines: 1 Lycoming IO-360-A1B6 piston engine

Year of Manufacture: 1971

Date & Time (UTC): 10 July 1998 at 1713 hrs

Location: Cranfield Airfield, Bedfordshire

Type of Flight: Private

Persons on Board: Crew - 1 - Passengers - None

Injuries: Crew - None - Passengers - N/A

Nature of Damage: Minor damage to the stabilator and underfuselage skin

Commander's Licence: Private Pilot's Licence with IMC and Night Rating

Commander's Age: 36 years

Commander's Flying Experience: 239 hours (of which 77 were on type)
Last 90 days - 30 hours
Last 28 days - 11:30 hours

Information Source: Aircraft Accident Report Form submitted by the pilot

Just after take off from Woodford on a flight to Meppershall, Bedfordshire, the pilot noticed that the electro-hydraulically operated landing gear had not retracted normally after selection and that, with neither red nor green indication lights illuminated, the gear could not be locked down. He attempted, in accordance with the aircraft Operating Handbook, to extend the gear by using the hand pump, but even after a prolonged period of operation there was no resistance to his pumping. Throughout the flight the pilot made further attempts to fully extend the landing gear, but without success. As he realised that a landing without the gear locked down would be inevitable, he declared an emergency to East Midlands Approach. After discussing possible places to land, including Leicester and Henlow, the pilot decided to land at Cranfield Airfield since a grass runway and the Airfield Fire Service (AFS) were available. Following an overflight of the Airfield and a simulated approach for the benefit of the AFS, the aircraft was landed on the grass just to the right of disused Runway 26 after the pilot had shut down the engine, fuel and electrical systems before touchdown. During the landing, the nose gear remained extended but both main gear legs collapsed rearwards, causing minor damage to the underside of the fuselage and the stabilator. The pilot, who was not injured, vacated the aircraft and the AFS then disconnected the battery.

Aproximately 10 flying hours before this incident, it was reported that the low voltage warning light had been illuminating intermittently, in time with the strobe lights. An investigation at that time had concluded that a faulty pressure switch in the landing gear hydraulic pump had been causing the pump to run continuously after gear retraction, thereby draining system voltage. As a result, the pump and pressure switch had been replaced. However examination of the aircraft, by the organisation responsible for its maintenance, following the landing at Cranfield revealed that the hydraulic system was empty of fluid. After the system had been replenished and functioned, a fluid leak was observed at a flared pipe connection immediately downstream of the pump. Closer examination revealed that a crack had formed in the flared end of the pipe, and had caused the complete loss of fluid. It was therefore evident that this leak had prevented the pressure switch from sensing the normal rise in hydraulic pressure which should occur after gear retraction, causing the pump to continue to run for an extended period of time, as evidenced by the state of wear of the associated electric motor.