ACCIDENT

Aircraft Type and Registration:	Cessna F177RG Cardinal, G-BFPZ
No & Type of Engines:	1 Lycoming IO-360-A1B6D piston engine
Year of Manufacture:	1973
Date & Time (UTC):	24 April 2008 at 1611 hrs
Location:	Swansea Airport
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - 2
Injuries:	Crew - None Passengers - None
Nature of Damage:	Damage to the landing gear and tailplane
Commander's Licence:	Private Pilot's Licence
Commander's Age:	68 years
Commander's Flying Experience:	892 hours (of which 58 were on type) Last 90 days - 12 hours Last 28 days - 1 hour
Information Source:	Aircraft Accident Report Form submitted by the pilot, follow up telephone inquiries, and in-situ examination by the AAIB of the main landing gear downlocks

Synopsis

On landing, both main landing gears retracted. Upon recovery of the aircraft, the master switch was selected ON, following which the landing gear completed its deployment cycle and locked down; the green GEAR DOWN light also illuminated. A visual check of the landing gear revealed no evidence of failure or defects, although at the time the aircraft was recovered, full functional testing could not be carried out.

History of the flight

The pilot reported that the aircraft had been flown without incident earlier on the day of the accident, and that both the departure from Yeovil and the flight to Swansea were uneventful. The front seat passenger was also a PPL holder and acted as 'co-pilot' on the flight, handling the radio and navigation.

Upon contacting Swansea they were informed that Runway 22 was in use, with a right-hand circuit and, with no other traffic in the circuit, they elected to join on a left base leg. After slowly retarding the throttle on base leg, the gear horn sounded as the airspeed reduced through around 100 kt and the pilot moved the landing gear selector lever to the down position. After doing so, he recalled the amber 'gear unsafe' light illuminating and then extinguishing as the gear

extended, accompanied by what he described as the "usual audible rumble and clonks". He asked the passenger to check that he could see both the nose and right main wheels, using a convex mirror beneath the right wing. The passenger confirmed that he could. The pilot then glanced down to his left to check the main wheel on the left side, which he could see, but he omitted to check that the single green GEAR DOWN light was illuminated.

Just before turning finals at 90 kt, the pilot selected first stage flaps and at the commencement of final approach he reported that his passenger called "finals three greens". The pilot was occupied with his approach checks at this stage and omitted to confirm the gear down indication, selecting second stage flaps at 80 kt. The final approach and initial touchdown both felt normal but, as the aircraft settled onto the runway and the nosewheel contacted the ground, there was a scraping sound from the tail. Glancing over his shoulder, the pilot realised that the main wheels had retracted. At the same time, the aircraft started to veer left towards the Alpha taxiway intersection. The ignition and master switches were turned to OFF, and the aircraft came to a halt without further incident on the left edge of the runway at the taxiway intersection, having left a scrape mark on the runway some 156 m in length. All three occupants evacuated the aircraft without difficulty.

Aircraft examination

The aircraft owner, who was involved in recovering the aircraft from the runway, reported that after lifting the aircraft clear of the ground, he turned on the master switch. The landing gear then proceeded to continue its cycle and lock down, and the green landing gear safe light illuminated.

The pilot was unable to explain the collapse of the main landing gear but acknowledged that, as PIC, he had at least two opportunities to check that the GEAR DOWN light was illuminated, but failed to do so.

In light of prior instances of main landing gear down lock failure on Cessna 177RG aircraft, the down locks on G-BFPZ were examined in situ for visual signs of malfunction or failure, following the aircraft's recovery and the lowering of the gear by the owner. Both lock assemblies, which were of the later hydraulically (as distinct from electro-mechanically) actuated type, appeared normal, and each was fully engaged. Functional checks could not be carried out in situ due to lack of suitable jacking equipment, but in the event that further information as to the cause of the landing gear collapse becomes evident during repair of the aircraft, an addendum will be issued in a future AAIB Bulletin.