

<b>Aircraft Type and Registration:</b>	Piper PA-28R-200-2, G-BCGS	
<b>No &amp; Type of Engines:</b>	1 Lycoming IO-360-C1C piston engine	
<b>Year of Manufacture:</b>	1972	
<b>Date &amp; Time (UTC):</b>	2 May 2005 at 0850 hrs	
<b>Location:</b>	Little Gransden Airfield, Bedfordshire	
<b>Type of Flight:</b>	Private	
<b>Persons on Board:</b>	Crew - 2	Passengers - None
<b>Injuries:</b>	Crew - None	Passengers - N/A
<b>Nature of Damage:</b>	Propeller destroyed, engine shock loaded, damage to the under-side of fuselage	
<b>Commander's Licence:</b>	Commercial Pilot's Licence with Instructor Rating	
<b>Commander's Age:</b>	35 years	
<b>Commander's Flying Experience:</b>	3,173 hours (of which 15 were on type) Last 90 days - 100 hours Last 28 days - 42 hours	
<b>Information Source:</b>	Aircraft Accident Report Forms submitted by the pilots and telephone enquiries by AAIB	

### History of flight

The aircraft owner's Private Pilot's Licence (PPL) had lapsed, and he had not flown for some time. Consequently, he contacted an experienced flying instructor, who was familiar with the aircraft type, for some tuition in preparation for a renewal Skill Test. The instructor briefed the owner on the Skill Test exercises, and the two prepared for a flight consisting of upper air exercises, circuits, and Practice Forced Landings (PFLs).

The aircraft's landing gear automatic extension system (intended to extend the landing gear automatically to prevent a wheels-up landing) had been removed in accordance with Piper Service Bulletin SB866A and replaced with a landing gear warning system, in the week before the accident flight, and both instructor and owner briefed themselves on the functioning of the newly installed warning system. The warning system sounds a horn and illuminates a light if either the throttle is closed or the flaps are extended beyond the first position without the landing gear being locked down.

The aircraft departed Little Gransden Airfield and the flight began with upper air exercises, including steep turns, slow flight, stalls in various configurations, and PFLs. During these exercises, the landing gear warning horn sounded several times and for long periods.

The aircraft returned to Little Gransden for some circuits and PFLs on Runway 10. During the final PFL, it became apparent that the wind was favouring the opposite Runway 28, and the owner flew a go-around, raising the landing gear and flaps as he did so. The owner began a manoeuvre to reposition the aircraft directly onto a base leg for Runway 28, but during the climb, the instructor noticed some horses in the field below, and took control to avoid over-flying them.

The instructor handed control back to the owner, and instructed him to make a flapless approach and landing. The owner flew the aircraft onto the approach, regained the extended centreline of the runway lower and closer in than normal, and used a small amount of power to maintain a correct speed and approach angle.

The owner closed the throttle in the flare, and the aircraft settled "*fairly gently*" onto the runway, sliding to a stop on the underside of the fuselage in a short distance. Both occupants, who were wearing lap and diagonal harnesses, vacated the aircraft without injury through the normal door. There was no fire.

The owner commented that he believed that he did not select the landing gear DOWN, because the final approach was flown without a downwind leg, and that distraction and high workload caused him to omit his customary 'Red, Blue, Green'<sup>1</sup> check on final approach. He did not recall hearing the landing gear warning horn prior to touchdown, but he added that the long periods of activation of the landing gear warning horn during the flight had conditioned him to be '*immune*' to the operation of the horn, and that the system provides little protection in the case of a flapless approach and landing.

The flying instructor reported that although there was no specific time pressure on the day, the flight had been '*intense*' and that the accident occurred at a '*period of high workload*'. He added that the owner had performed well throughout the flight and that he may have relaxed somewhat as a consequence of this. He recalled hearing the landing gear warning system horn just prior to touchdown, when power was reduced, and commented that it is not possible to see the landing gear indications in the cockpit from the right seat, without deliberate movement of the head.

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<sup>1</sup> The 'Red, Blue, Green' check is often used in 'complex' light aircraft as a final check just prior to landing. 'Red' relates to a check of the position of the mixture control (coloured red in the cockpit), 'Blue' to that of the propeller control (coloured blue), and 'Green' to a check of the landing gear indications (green lights indicate that the landing gear is down).