

<b>Aircraft Type and Registration:</b>	Pierre Robin DR400/180R, G-BPZP	
<b>No &amp; Type of Engines:</b>	1 Lycoming O-360-A4A piston engine	
<b>Year of Manufacture:</b>	1980	
<b>Date &amp; Time (UTC):</b>	7 May 2005 at 1300 hrs	
<b>Location:</b>	Lasham Airfield, Hampshire	
<b>Type of Flight:</b>	Private	
<b>Persons on Board:</b>	Crew - 1	Passengers - None
<b>Injuries:</b>	Crew - 1 (Minor)	Passengers - N/A
<b>Nature of Damage:</b>	Substantial damage	
<b>Commander's Licence:</b>	Private Pilot's Licence	
<b>Commander's Age:</b>	75 years	
<b>Commander's Flying Experience:</b>	469 hours (of which 120 were on type) Last 90 days - 8 hours Last 28 days - 8 hours	
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot and further enquiries by AAIB	

### History of the flight

The aircraft was one of a number being used to provide aero-tows to club gliders at Lasham. The pilot, himself an experienced glider pilot and instructor, was just completing his second flight of the day in the aircraft and was approaching to land when the accident happened. Gliders were assembled near to the threshold of Runway 27, and the aero-tow aircraft were landing on a grass area adjacent to the gliders and immediately to the south of the main runway. A number of witnesses in the vicinity of the gliders observed the aircraft as it completed its turn onto final approach, at a height estimated to be between 150 and 250 feet. The aircraft was seen to roll to the right, in what initially appeared to be a controlled manner. However, the roll to the right continued and the aircraft departed from controlled flight, impacting the ground in a steeply banked attitude, having turned through about 120° from the direction of landing. Initial contact with the ground was made by the right wing tip. The aircraft then cart-wheeled, during which the engine separated and further substantial damage occurred to the left wing and empennage, though the cabin area remained largely intact. The fuel tank, situated behind the passenger compartment, remained intact and there was no fire.

Gliding club members were quickly on the scene and attended to the pilot. With no immediate risk of fire, the pilot was advised to remain in the aircraft until he could be examined and treated by the emergency services, which attended directly. The pilot was wearing a four point harness and suffered only minor injuries in the accident.

The aircraft was recovered to the gliding club's own maintenance facility where it was examined; no sign of a pre-impact failure was found. The aircraft had recently been the subject of an extensive rebuild at a facility in France and had flown some 75 hours since its last check. It had flown thirteen times on aero-tows during the day with no reported faults, and had been re-fuelled when the pilot had assumed his tug-pilot duties on the flight before the accident.

### **Pilot experience**

The pilot was an experienced glider pilot and instructor, with about 4,000 gliding hours, and was well regarded within the gliding community. His powered flying experience was mainly gained in club aero-tow aircraft and motor gliders. The gliding club monitored tug pilots' currency and competency, and the pilot was considered fit for aero-tow duties. The pilot sometimes had difficulty in maintaining adequate currency on the Robin, but was in the practise of asking for a check flight if he felt it necessary. In this case, as the pilot had not flown the Robin for a period, he had undergone a check flight a week before the accident with a Class Rating Instructor (CRI). This flight included stall manoeuvres and practise engine failures and was followed by a dual sortie conducting aero-tows. There were no issues arising from the two flights, and the instructor assessed the pilot's handling skills as very good.

### **Possible causes**

The pilot's initial thought was that the tow cable must have snagged in trees during the approach and imparted a yaw to the aircraft which caused the roll. In flight at 60 kt the end of the cable is about 50 feet below the tug aircraft, and the pilot was conscious of this during the approach. As he completed the turn onto final, he became aware of a sink rate developing and applied power to correct, though not as much as full power. He then thought he sensed a 'tugging' from the tow cable and initiated a dive which he hoped would break the weak link in the cable. However, almost as soon as he moved the control stick forward, the aircraft started to roll to the right, and the pilot was unable to stop the roll with full 'opposite controls'. He did not further alter the power setting prior to impact with the ground.

The tow cable was subsequently inspected. Weak links at either end of the cable were set at 900 lbs and 1100 lbs and were designed to indicate if a force approaching the limit had been experienced. Both weak links were in good condition and showed no signs of distress: the cable itself bore no

evidence of contact with trees. Additionally, eye witnesses believed that the aircraft was too far from the trees for this to be a causal or contributory factor in the accident.

Although it was a fine day there was a brisk surface wind from the north-west at an estimated 20 to 25 kt. From this direction the wind was blowing over a line of substantial trees, thereby creating turbulence on the approach down to about 50 feet. The pilot reported that his airspeed on the approach was 65 kt with half flap selected. This approach speed was appropriate for calm conditions but the club recommendation was to add half the wind strength to the approach speed; it was therefore less than recommended in the given conditions.

From the pilot's account, eye-witness information and known conditions, it is likely that the pilot encountered negative wind shear during the approach which caused the aircraft's right wing to stall. Once the wing was stalled, the roll and the pilot's application of full left aileron would have served to exacerbate the situation, causing the aircraft to enter an autorotative manoeuvre from which there was insufficient height to recover. The pilot subsequently flew a sortie with the CRI which included a number of stall manoeuvres, including aggravated stalls with an induced wing drop. The pilot was subsequently of the opinion that a stall on finals in the gusty conditions was a likely cause of the accident.