

## ACCIDENT

<b>Aircraft Type and Registration:</b>	Piper PA-34-200T Seneca II, G-FILE	
<b>No &amp; Type of Engines:</b>	2 Continental Motors Corp TSIO-360-EB piston engines	
<b>Year of Manufacture:</b>	1980 (Serial no: 34-8070108)	
<b>Date &amp; Time (UTC):</b>	11 July 2018 at 1003 hrs	
<b>Location:</b>	Cotswold (Kemble) Airport, Gloucestershire	
<b>Type of Flight:</b>	Private	
<b>Persons on Board:</b>	Crew - 1	Passengers - 2
<b>Injuries:</b>	Crew - None	Passengers - None
<b>Nature of Damage:</b>	Damage to left propeller, underside of left wing and aileron, rear fuselage	
<b>Commander's Licence:</b>	Private Pilot's Licence	
<b>Commander's Age:</b>	64 years	
<b>Commander's Flying Experience:</b>	922 hours (of which 127 were on type) Last 90 days - 11 hours Last 28 days - 8 hours	
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot	

## Synopsis

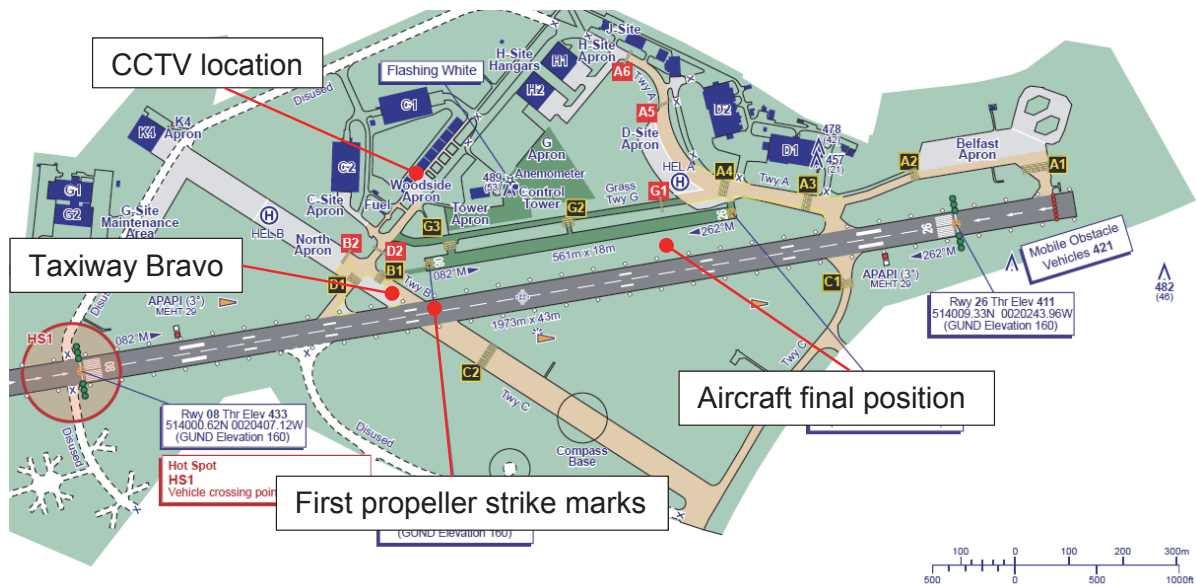
The pilot was making a normal approach to Runway 08 at Cotswold Airport with the intention to perform a 'touch-and-go'. As the aircraft touched down he felt the wing drop as the left main landing gear collapsed. The pilot maintained the aircraft on the runway until the left wing and propeller contacted the runway, the aircraft veered to the left and came to a halt. It was found that both main landing gear downlocks were not engaged. It has not been possible to determine the cause of the main landing gears unlocking.

## History of the flight

The pilot and two passengers departed Bristol Airport at 0930 hrs for a flight to Cotswold (Kemble) Airport and were planning to return later that day. The pilot configured the aircraft for landing with the intention to perform a 'touch-and-go' on Runway 08. The wind was 6 kt from 060°. The pilot confirmed that he had three GREEN landing gear indications and touched down successfully at approximately 90 kt IAS at 1002 hrs. Before reapplying power for the takeoff, the pilot raised the flaps and as he did so, noticed the left wing drop. He corrected this by using the ailerons and aborted the takeoff. The pilot maintained the aircraft on the runway until the left wing and propeller contacted the runway and the aircraft veered to the left. It came to rest on the grass between the tarmac and grass runways with the left main landing gear collapsed. The pilot and passengers exited unaided and without injury.

## Accident site

Examination of the runway showed impact marks from the left propeller after the aircraft had passed the intersection with Taxiway Bravo (Figure 1). There were 15 strike marks and the spacing was consistent with an aircraft speed of 70-80 kt. Further along the runway there were more strike marks along with scraping from the left wing and aileron and the aft fuselage. The aircraft halted facing north-west on the grass between the tarmac and grass runways.



**Figure 1**  
Cotswold Airport

## Aircraft Information

The landing gear on the Piper PA-34 Seneca II is a fully retractable, hydraulic tricycle configuration. It is raised and lowered by an electrically-driven, reversible hydraulic pump and each leg is held in the down position by a spring-loaded downlock hook. Once the downlocks engage the pump switches off and three GREEN indications are illuminated in the cockpit. In the event of a loss of hydraulic power there is a system which releases the hydraulic pressure and allows the landing gears to extend under gravity.

## Aircraft recovery

As the aircraft was lifted by a recovery vehicle, the right main landing gear collapsed, however the nose landing gear remained down. The aircraft was examined at the accident site and it was found that neither downlock on the main landing gears was engaged. The recovery team attempted to lock the landing gear down but were prevented by hydraulic pressure in the system, stopping the downlocks from engaging. The cockpit emergency landing gear release lever was operated, which released the pressure, and the downlocks engaged. The aircraft was then towed to a storage facility at the airfield.

## Aircraft examination

Both main landing gears and associated linkages were examined, with no defects found that could have caused the landing gears to unlock. The operation of the microswitches and the GREEN indicators in the cockpit were checked and no defects were found. The tips of the left propeller blade were eroded from contact with the runway, along with the left aileron and its hinges and a section of the aft fuselage (Figure 2).



**Figure 2**  
Aircraft damage

## Recorded information

A closed-circuit camera mounted on a hanger at the Woodside Apron captured the landing from Taxiway Delta until the aircraft veered off the runway (Figure 3). The footage is consistent with the left wing dropping with propeller contact, correcting and then contact further along the runway.



**Figure 3**  
Landing Sequence

## Analysis

The pilot stated that on the approach he saw the three GREEN 'landing gear down' indicators. It is possible that during of the landing sequence, there was a short application of hydraulic pressure to the landing gear retraction system which was sufficient only to start the retraction sequence. This could have unlocked the main landing gears but stopped before the gears started to raise. This pressure would then have been released during the recovery of the aircraft when the emergency landing gear release was operated. The cause of such pressure in the retraction system could not be determined.

Two similar incidents of PA-34 main landing gear collapse have been reported in AAIB Bulletins.

G-FILE	14 Oct 1988	Bulletin 3/1989	Right main landing gear collapse
G-BEHU	20 Sept 2002	Bulletin 4/2003	Left main landing gear collapse

In both incidents, despite extensive examination and testing, no cause could be found for the unlocking of the landing gear.

### Conclusion

At an unknown point after the pilot had confirmed three GREENS, the main landing gear became unlocked, which led to the left landing gear collapsing during landing. While the aircraft was being recovered, it was found that there was pressure in the hydraulic system preventing the leading gear downlocks from engaging. This pressure was released by the emergency landing gear extension system and the locks engaged. Subsequent examination found no defects with the landing gear and the cause of the pressure which unlocked the landing gear could not be determined. Despite a similar incident to the same aircraft in 1988 no further action is to be taken as the aircraft is beyond economic repair.