

## ACCIDENT

<b>Aircraft Type and Registration:</b>	Piper PA-25-235 Pawnee, G-ASVP	
<b>No &amp; Type of Engines:</b>	1 Lycoming O-540-B2C5 piston engine	
<b>Year of Manufacture:</b>	1964	
<b>Date &amp; Time (UTC):</b>	17 June 2007 at 1355 hrs	
<b>Location:</b>	Hinton-in-the-Hedges, Northamptonshire	
<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>	Major damage to engine propeller and cockpit area. Minor damage to one wingtip	
<b>Commander's Licence:</b>	Private Pilot's Licence	
<b>Commander's Age:</b>	49 years	
<b>Commander's Flying Experience:</b>	385 hours (of which 50 were on type) Last 90 days - 2 hours Last 28 days - 1 hour	
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot and subsequent AAIB enquiries	

## Synopsis

After a normal landing, the aircraft's tail began to rise and the propeller struck the ground. As a result, the aircraft pitched onto its back. Two Safety Recommendations have been made with regard to the survivability of this accident.

## History of the flight

The pilot was a regular volunteer tug pilot for the gliding club operating at the airfield and was returning to the airfield from the eighth aerotow launch of the day. The weather was fine with a light westerly breeze. Runway 27 was in use for launching and Runway 33, although subject to a slight crosswind, was being used for landing; both runways have grass surfaces.

This was the pilot's second landing on Runway 33 with the first causing no difficulty. The pilot reported that the approach and landing seemed normal, although witnesses recalled seeing a slight bounce on landing. As the aircraft decelerated, its tail began to rise and, at a speed estimated by the pilot to be about 30 mph, the propeller struck the ground. The aircraft continued pitching and fell slowly onto its back.

The aircraft was fitted with a rotating anti-collision beacon, mounted in the roof above the pilot's seat. As the aircraft pitched onto its roof, the anti-collision beacon broke through the cockpit roof, and impacted the pilot's head, causing lacerations. Additional injury was caused

by the pilot's head hitting the internal attachment bolts for an aerial.

The cockpit had two doors, one on each side, each hinged on its lower edge and latched at the top. The pilot attempted to open each side door of the aircraft but was unable to do so as the doors were jammed against the ground under the aircraft. Other members of the gliding club arrived and lifted one of the aircraft's wings, enabling a cockpit door to be opened. The pilot exited the aircraft and received first aid from a club member whilst another member reached into the cockpit and switched off the master and magneto switches. There was no fire.

### **The pilot's recollection**

The pilot stated that he thought he placed his feet too high on the rudder pedals prior to landing and that he may have inadvertently applied some brake pressure during the landing roll. He also commented that the general public have access to the airfield near the Runway 33 threshold and a high degree of awareness is required to avoid the possibility of the cable causing injury during the approach.

### **The club investigation**

An accident report, produced by the gliding club mentioned:

*'distinct signs of two lines of flattened grass from both wheels where the grass was laid down due to braking effect.'*

It also stated that the pilot had described the *'stick position'* during the landing as *'mostly back'*. The pilot reported to the AAIB that the stick was *'back for landing'*.

### **Aircraft information**

The Piper Pawnee is a low-wing, tailwheel configured monoplane used throughout the world as an agricultural and glider-tugging aircraft. It is tail-heavy and does not have a propensity to pitch onto its back during landing, provided that the control column is held fully back.

### **Analysis**

The pilot was relatively experienced but not in current flying practice. Although the Pawnee aircraft is not known for a tendency to pitch over on landing (as some other types are), the accident itself was relatively benign. The probable cause of the pitch over was a combination of inadvertently applied brake pressure and the stick not being fully back during the rollout.

### **Survivability**

#### *The anti-collision beacon*

The head injuries sustained by the pilot were caused by the anti-collision beacon being forced through the roof of the cockpit. Survival of aircraft occupants in accidents depends, essentially, on three things: the occupant must be appropriately restrained, contained within a protective 'living volume' (which must not be breached) and the forces experienced must be survivable.

Other Pawnee aircraft on the UK register have various different anti-collision light installations, with at least eight aircraft having the light mounted directly on the roof of the cockpit. The remainder either have the light installed in a fairing to the rear of the cockpit or on the spine of the rear fuselage. The two latter installations are situated such that, in the event of an accident such as this, they would not compromise the living volume of the cockpit, nor cause direct injury to the occupant. Lights have been installed, over the years, in different places,

either by the manufacturer at build or through later modifications. However there are no recommendations on moving the light assembly from the roof of the cockpit to another part of the aircraft. The following Safety Recommendation is therefore made.

**Safety Recommendation 2008-011**

It is recommended that Lavia SA (the present Type Certificate holder) produce a modification for aircraft that have the anti-collision light assembly on the roof of the cockpit, which moves the light to a position which would not compromise the living volume of the cockpit in the event of an accident and that Direccion Nacional De Aeronavegabilidad ensure that Lavia SA produce the relevant modification and consider making it mandatory.

*Escape*

The design of the doors prevented the pilot from vacating the aircraft after the accident until assistance arrived. The doors on G-ASVP were to the original Piper design. In aircraft manufactured after serial

number 25-4172 (in 1967), Piper changed the door design and introduced an emergency door release system so that pull handles release hinge pins in the lower hinges of the door. Once the pins are released the door can be opened. Despite this design change, Piper did not issue any retrofit modifications for older aircraft, such as G-ASVP. Had G-ASVP been fitted with the emergency door release system, the pilot would have been able to exit the aircraft without assistance. This is particularly important because any fire occurring would not only have endangered the pilot's life but also prevented others from rendering assistance. The following Safety Recommendation is therefore made.

**Safety Recommendation 2008-012**

It is recommended that Lavia SA produce a retrofit modification for the installation of an emergency door release system on Piper PA-25-235 aircraft manufactured prior to serial number 25-4171, and that Direccion Nacional De Aeronavegabilidad ensure that Lavia SA produce the relevant modification and consider making it mandatory.