

ACCIDENT

Aircraft Type and Registration:	Vans RV-9A, G-XSAM	
No & Type of Engines:	1 Wilksch WAM-120 piston engine	
Year of Manufacture:	2008 (Serial no: PFA 320-13797)	
Date & Time (UTC):	18 September 2015 at 1830 hrs	
Location:	Old Sarum Airfield, Wiltshire	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - 1
Injuries:	Crew - None	Passengers - None
Nature of Damage:	Damage to propeller, nose and nose landing gear	
Commander's Licence:	Commercial Pilot's Licence	
Commander's Age:	35 years	
Commander's Flying Experience:	3,046 hours (of which 2 were on type) Last 90 days - 78 hours Last 28 days - 23 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

Synopsis

During the ground roll after landing, the nose landing gear folded backwards and the nose and propeller struck the ground. The damage to the nose gear was consistent with overload forces, but the pilot was unable to say how such loads had been generated.

History of the flight

The aircraft was landing on grass Runway 24 at Old Sarum at about 1830 hrs UTC. The pilot reported that the touchdown and first part of the ground roll were normal but, as the aircraft slowed, the nose landing gear collapsed and the nose and propeller struck the ground before it came to a halt.

Discussion

The pilot stated that he was unsure as to why the collapse had occurred. He considered that his technique had been no different from the previous three landings he had performed earlier in the day and two he had observed the owner of the aircraft conducting. He believed he had applied "suitable" back pressure on the control column during the landing roll. He said that the runway was quite bumpy but he had not felt any major bumps.

Examination of the aircraft showed that the nose landing gear leg had folded backwards and there was distortion of the nosewheel fork relative to the leg. Previous experience of collapses on this type of nose gear suggests that this kind of damage is typical when the

nose landing gear is subjected to high loads which can cause the nosewheel fork to bend and dig into the ground – the resulting drag on grass runways then typically causes the leg itself to collapse backwards in bending near its mounts (Figure 1).



Figure 1

Nose landing gear of G-XSAM showing distortion of nosewheel fork and tubular leg

The Light Aircraft Association (LAA) Type Acceptance Data Sheet for the Vans RV-9 and -9A contains the following paragraph:

'Problems have been experienced with the RV-9A noseleg, especially when operating off grass, with instances of the nosewheel bending back and the strut digging into the ground, causing a rapid stop and further damage. In order to avoid this risk, it is important to maintain the correct nosewheel tyre pressure, and to trim the spat to ensure generous clearance between the tyre and the wheel aperture in the spat (circa half an inch). It is also important to maintain suitable preload on the nosewheel axle bearings, torquing up the axle nut gently as required in the absence of a conventional spacer between the bearings. It is also important to land the aircraft on the mainwheels first and hold the nosewheel off the ground during the initial part of the landing roll, rather than landing on all three wheels together which encourages wheelbarrowing and overloading the nosewheel.'

This advice is also reflected in various manufacturers' communications including a Vans Service Letter dated 9 November 2007, which advocated keeping *'the stick fully back when taxiing, especially after touchdown'*.

It is noted that the landing occurred nearly 15 minutes after official sunset. It is not known whether this had any bearing on the accident.