ACCIDENT

Aircraft Type and Registration:	Short SC7 Skyvan 3, G-BEOL
No & Type of Engines:	2 Garrett Airesearch TPE331-2-201A turboprop engines
Year of Manufacture:	1977 (Serial no: SH.1954)
Date & Time (UTC):	3 May 2013 at 1320 hrs
Location:	Weston-on-the-Green, Oxfordshire
Type of Flight:	Aerial Work
Persons on Board:	Crew - 1 Passengers - 3
Injuries:	Crew - None Passengers - None
Nature of Damage:	Nose landing gear fractured, nosewheel detached, damaged frames on the underside of fuselage
Commander's Licence:	Private Pilot's Licence
Commander's Age:	59 years
Commander's Flying Experience:	1,117 hours (of which 146 were on type) Last 90 days - 92 hours Last 28 days - 35 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot and enquiries by the AAIB

Synopsis

As the nosewheel contacted the ground on touchdown on Runway 27 at Weston-on-the-Green the nosewheel and yoke assembly detached from the aircraft. The aircraft veered off the runway and came to a stop with a nose-down attitude. There were no injuries to the crew or passengers. The nose landing gear had fractured across the plated portion of the oleo. A forensic examination of the damaged nose landing gear assembly is being carried out by the manufacturer.

History of the flight

The aircraft had returned to Weston-on-the-Green after refuelling at RAF Brize Norton and made an uneventful approach to the grass Runway 27. The pilot was about to take up steering control on the tiller but as the nosewheel touched down the wheel and its yoke detached from the aircraft. The aircraft veered off the runway to a controlled stop. The pilot conducted engine and aircraft shutdown drills and the passengers and crew disembarked the aircraft without further incident. The nosewheel and yoke assembly had come to rest at the edge of the runway having sheared from the oleo within the plated portion just above the yoke.

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Pilot's comment

The pilot described the landing, up to the nose landing gear failure at Weston-on-the-Green, as "quite normal with nothing untoward". However on reflection he noted that during the landing at RAF Brize Norton he became aware of more nose gear shimmy than usual. This subsided as his speed decayed and he thought nothing more of it. The shimmy did not re-appear during taxi and takeoff for the return flight to Weston-on-the-Green.

Aircraft details

The Short SC7 Skyvan is an all-metal high-wing monoplane powered by two turboprop engines. It is fitted with fixed tricycle landing gear with a steerable nosewheel. It is designed to operate from prepared and unprepared runways and although its primary role was originally for cargo transport it is often used as a parachute drop aircraft.

Engineering investigation

The remains of the nose landing gear assembly were removed from the aircraft and along with the nosewheel and yoke assembly were transferred to the manufacturer for analysis at the request of the aircraft owner. The lower portion of the torque link had separated at the mid-pivot point and remained attached to the yoke and the upper portion of the torque link had detached completely from the nose landing gear forging. There were two fracture faces apparent on the main forging and on the yoke. The inner oleo liner had fractured just above an area where its diameter increases to accommodate the male portion of the thread on to which the outer piston of the oleo and yoke attaches. The second fracture face was around the circumference of the outer oleo piston where the female portion of the attachment thread finishes. Inspection of the aircraft structure revealed damage to the structure of the underside of the fuselage consistent with the nose landing gear collapse. The mechanism by which the fractures occurred is the subject of an ongoing forensic investigation by the manufacturer.

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