

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# WPR15LA109	02/19/2015 1300 PST	Regis# N166DR	Shelton, WA	Apt: N/a
Acft Mk/Mdl BELL/GARLICK UH 1H		Acft SN 66-16949	Acft Dmg: SUBSTANTIAL	Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl LYCOMING T53-L-13		Acft TT 11620	Fatal 0 Ser Inj 0	Flt Conducted Under: FAR 137
Opr Name: NORTHWEST HELICOPTERS LLC		Opr dba:		Aircraft Fire: NONE
				AW Cert: SPR

Events

1. Maneuvering-hover - Powerplant sys/comp malf/fail
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Narrative

On February 19, 2015, about 1300 Pacific standard time, a Bell/Garlick UH 1H Helicopter, N166DR, made an emergency landing and rolled over following a loss of engine power while in a hover near Shelton, Washington. Northwest Helicopters, Inc., was operating the helicopter under the provisions of 14 Code of Federal Regulations Part 137. The commercial pilot received minor injuries, the helicopter was substantially damaged. Visual meteorological conditions prevailed, and no flight plan had been filed.

The pilot reported that while in a hover and beginning to lift a 3,000-pound agricultural application container, he heard a loud bang followed by the low rotor warning horn sounding. The pilot pulled away from ground crew as the helicopter yawed to the left. He was able to keep the helicopter level about 5 to 7 ft above the ground when he pulled the remaining collective pitch to touch down. The ground underneath was uneven and the helicopter subsequently rolled over onto its right side.

During the postaccident wreckage examination, the engine to transmission driveshaft adapter (Part Number 204-040-812-3), was found broken in multiple pieces. The driveshaft adapter is the component between the engine output and the driveshaft. The failed components were recovered and sent to the National Transportation Safety Board Materials Laboratory Division for further examination.

The Materials Engineer reported that thumbnail-shaped patterns and progressive crack arrest marks consistent with fatigue were observed on the fracture surfaces. The bolt that attached the driveshaft adapter to the mating coupling set had separated. The fracture surfaces on the bolt were generally flat, with progressive crack arrest lines consistent with fatigue cracking.

Bell Helicopter Alert Service Bulletin No. 204-77-6 dated September 30, 1977, Inspection of Engine Drive Shaft Adapter Bolt, P/N 204-040-813-001 for loss of torque, and Technical Bulletin No. 204-81-18 dated June 10, 1981, Engine Driveshaft Adapter P/N 204-040-812-003 rework, indicated that considerable fretting wear damage had occurred to the engine output adapter plug, P/N 1-030-360-04 when engines were returned for overhaul. Extensive wear will allow the drive shaft adapter, P/N 204-040-812-003, to seat on the anti-rotation tangs of the plug and result in a false torque of bolt, P/N 204-040-813-001. The condition will cause plug wear and reduction gear damage. The fretting wear damage of the plug will be eliminated by maintaining the required torque of 160-200 inch-pounds on bolt, P/N 204-040-813-001. Both bulletins recommend compliance times to minimize fretting wear and damage. (See public docket for more information).