



National Transportation Safety Board Aviation Accident Final Report

Location:	Stockton, CA	Accident Number:	WPR11LA423
Date & Time:	09/01/2011, 1840 PDT	Registration:	N205PJ
Aircraft:	ARROW FALCON EXPORTERS INC UH-1H	Aircraft Damage:	Substantial
Defining Event:	Powerplant sys/comp malf/fail	Injuries:	1 Minor
Flight Conducted Under:	Part 91: General Aviation - Positioning		

Analysis

During cruise flight, the pilot noted a fluctuation in the engine oil pressure followed by the illumination of the red warning light indicating low oil pressure. He performed a precautionary landing, and at 10 feet above ground level, the engine lost total power. The helicopter subsequently landed hard on uneven terrain and rolled onto its left side. Postaccident examination of the engine revealed that a gear tooth on the starter-generator drive gear had separated. The separated tooth jammed the accessory gear drive train, which resulted in the failure of the engine oil pump and subsequent catastrophic engine failure due to oil starvation. The reason for the failure of the gear tooth could not be determined.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A total loss of engine power due to the separation of a tooth from the starter-generator drive gear, which resulted in failure of the engine oil pump and subsequent oil starvation.

Findings

Aircraft	Accessory drives - Failure (Cause) Oil - Fluid level (Cause)
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Factual Information

On September 1, 2011, about 1840 Pacific daylight time, an Arrow Falcon Exporters, Inc., UH-1H helicopter, N205PJ, sustained substantial damage when it rolled over during an emergency landing following a total loss of engine power near Stockton, California. The commercial pilot, the sole occupant, received minor injuries. P.J. Helicopters, Red Bluff, California, was operating the helicopter under the provisions of 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed for the cross-country repositioning flight, which had originated from Tracy, California, about 10 minutes before the accident. A company visual flight rules flight plan was on file and had been activated.

The pilot stated that, while in cruise flight, he noted a fluctuation in the engine oil pressure followed by the illumination of the red warning light indicating low oil pressure. As he was performing a precautionary landing, about 10 feet above ground level, the engine had a total loss of power. The helicopter subsequently landed hard on uneven terrain, and rolled onto its left side.

Postaccident teardown examination of the engine, which was conducted under the supervision of a Federal Aviation Administration inspector, revealed that a gear tooth on the starter-generator drive gear had separated. The separated tooth jammed the accessory gear drivetrain, which resulted in the failure of the engine oil pump and led to catastrophic engine failure due to oil starvation. The reason for the failure of the gear tooth was not determined.

History of Flight

Enroute-cruise	Powerplant sys/comp malf/fail (Defining event)
Emergency descent	Loss of engine power (total)
Landing-flare/touchdown	Roll over

Pilot Information

Certificate:	Airline Transport	Age:	55, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Helicopter	Toxicology Performed:	No
Medical Certification:	Class 2 Without Waivers/Limitations	Last Medical Exam:	02/25/2011
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	03/04/2011
Flight Time:	13200 hours (Total, all aircraft), 13050 hours (Pilot In Command, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	ARROW FALCON EXPORTERS INC	Registration:	N205PJ
Model/Series:	UH-1H	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Restricted	Serial Number:	64-13617
Landing Gear Type:	Skid	Seats:	2
Date/Type of Last Inspection:	08/08/2011, 100 Hour	Certified Max Gross Wt.:	9500 lbs
Time Since Last Inspection:		Engines:	1 Turbo Shaft
Airframe Total Time:	15000 Hours	Engine Manufacturer:	LYCOMING
ELT:	Installed, not activated	Engine Model/Series:	T-53
Registered Owner:	P J HELICOPTERS INC	Rated Power:	1150 hp
Operator:	P J HELICOPTERS INC	Air Carrier Operating Certificate:	

Meteorological Information and Flight Plan

Observation Facility, Elevation:	SCK, 27 ft msl	Observation Time:	1855 PDT
Distance from Accident Site:	14 Nautical Miles	Condition of Light:	Day
Direction from Accident Site:	99°	Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Clear	Temperature/Dew Point:	33° C / 11° C
Lowest Ceiling:	None	Visibility	10 Miles
Wind Speed/Gusts, Direction:	8 knots, 320°	Visibility (RVR):	
Altimeter Setting:	29.75 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Tracy, CA (TCY)	Type of Flight Plan Filed:	Company VFR
Destination:	Red Bluff, CA (RBL)	Type of Clearance:	VFR
Departure Time:	1830 PDT	Type of Airspace:	

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Minor		

Administrative Information

Investigator In Charge (IIC): James F Struhsaker **Adopted Date:** 11/26/2012

Additional Participating Persons: Richard Baker; FAA FSDO; Oakland, CA

Publish Date: 11/27/2012

Investigation Docket: <http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=81680>

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