Aviation Investigation Final Report

Location:	Denio, Nevada	**Accident Number:**	LAX08LA097
Date & Time:	April 11, 2008, 09:00 Local	**Registration:**	N24SD
Aircraft:	Bell 47G-3B-1	**Aircraft Damage:**	Substantial
Defining Event:	Miscellaneous/other	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Aerial observation		

Analysis

After the passenger shot a coyote during the predator control flight, the helicopter pilot circled the injured coyote. While maneuvering at 15 miles per hour and about 20 feet above the hilly terrain, the pilot heard a grinding noise, which he opined originated from the transmission. The pilot believed the helicopter was losing power, and he opted to immediately land on sloping terrain. The helicopter touched down hard, the main rotors severed the tail boom, and the helicopter rolled over. During the subsequent examination of the airframe, transmission, and engine, no evidence of a mechanical malfunction was found. One of the two cooling fan drive belts was not found seated, and may have rolled over on its pulley, producing the noise that the pilot may have misinterpreted as relating to a loss of power.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's inadvertent hard landing induced by a perceived loss of power and a main transmission anomaly while maneuvering at low altitude.

Findings

Aircraft	(general) - Not specified
Personnel issues	(general) - Flight crew
Environmental issues	Sloped/uneven terrain - Effect on operation

Factual Information

History of Flight

Maneuvering-low-alt flying	Miscellaneous/other (Defining event)
Landing-flare/touchdown	Hard landing
Landing-flare/touchdown	Roll over

On April 11, 2008, about 0900 Pacific daylight time, a Bell 47G-3B-1, N24SD, made a hard landing on hilly terrain about 25 miles south of Denio, Nevada. Following impact, the helicopter's skids collapsed, the main rotor blades severed the tail boom, and the substantially damaged helicopter rolled over. Neither the commercial pilot nor the passenger was injured during the aerial observation flight. The helicopter was operated by Helicopter Roundup Service, LLC, Nephi, Utah. Visual meteorological conditions prevailed at the time, and no flight plan was filed. The flight was performed under the provisions of 14 Code of Federal Regulations Part 91, and it originated from a private ranch near Denio, about 0700.

The pilot reported to the National Transportation Safety Board investigator that the purpose of the flight was predator control, and the passenger-gunman had just shot a coyote. The pilot opined that a mechanical malfunction occurred as he was circling the injured coyote about 20 feet above ground level, and while nearly in a hover.

According to the pilot, while maneuvering he heard a grinding noise emanating from the transmission, which was immediately followed by a loss of power to the main rotors. Prior to hearing the noise, there had not been any problem with the helicopter. The pilot stated that, at the time, the helicopter's airspeed was about 15 miles per hour, and he was unable to perform a successful autorotative descent.

The helicopter was recovered from the accident site and examined by Federal Aviation Administration (FAA) and Bell Helicopter personnel. In pertinent part, the swashplate and centrifugal clutch for the main rotor system showed no indication of failure, the engine and turbocharger rotated freely, the tail rotor drive shaft and tail rotor gear box rotated freely, and no signs of abnormal wear or failure were found. No evidence of any abnormal wear, failure, or anomalies with the transmission was found.

The FAA noted that the only discrepancy that was possibly pertinent to the pilot's report of hearing unusual noise may have related to the fact that one of the helicopter's two cooling fan drive belts was not found seated; although it was found at the accident site. The FAA reported that the belt may have rolled over on its pulley and made a noise that the pilot heard just before it broke.

Pilot Information

Certificate:	Commercial	**Age:**	45,Male
Airplane Rating(s):	None	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	July 13, 2007
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	August 10, 2007
Flight Time:	4153 hours (Total, all aircraft), 2746 hours (Total, this make and model), 4081 hours (Pilot In Command, all aircraft), 67 hours (Last 90 days, all aircraft), 13 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Bell	**Registration:**	N24SD
Model/Series:	47G-3B-1	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	3671
Landing Gear Type:	Skid	**Seats:**	3
Date/Type of Last Inspection:	February 27, 2008 100 hour	**Certified Max Gross Wt.:**	2950 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	9476 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	TVO-435-B1A
Registered Owner:	Helicopter Roundup Service, LLC	**Rated Power:**	270 Horsepower
Operator:	Helicopter Roundup Service, LLC	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	30 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	8°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Denio, NV (NONE)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	07:00 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	41.049999,-118.333335(est)

Administrative Information

Investigator In Charge (IIC):	Pollack, Wayne
Additional Participating Persons:	David Butler; Federal Aviation Administration; Reno, NV
Original Publish Date:	May 6, 2009
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=67806