Aviation Investigation Final Report

Location:	Arapahoe, Nebraska	**Accident Number:**	CEN09LA558
Date & Time:	September 2, 2009, 10:40 Local	**Registration:**	N58163
Aircraft:	Hughes 269C	**Aircraft Damage:**	Substantial
Defining Event:	Unknown or undetermined	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

During cruise flight in a reciprocating single-engine helicopter, the pilot heard a loud noise and felt a vibration. The pilot immediately entered an autorotation and turned the flight controls over to the flight instructor. The flight instructor elected to continue the autorotation to an open field. During the landing the helicopter's landing skids stuck into the soft terrain, causing the helicopter's nose to pitch down and tail to pitch up. The main rotor blades impacted the tail boom, severing it; the helicopter subsequently rolled onto its side. An examination of the helicopter failed to find a reason for the noise and vibration.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A sudden vibration for undetermined reasons.

Findings

Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Enroute-cruise	Unknown or undetermined (Defining event)
Autorotation	Off-field or emergency landing
Post-impact	Roll over

On September 2, 2009, approximately 1040 central daylight time, a single-engine, Hughes 269 helicopter, N58163, was substantially damaged during a landing after entering a precautionary autorotation. The pilot and flight instructor, were not injured. The helicopter was registered and operated by a private individual. Visual meteorological conditions prevailed and a flight plan was not filed for the 14 Code of Federal Regulations Part 91 cross-country flight.

In a statement submitted by the flight instructor, he reported that while in cruise flight, they heard a loud noise and the pilot immediately entered an autorotation. During the autorotation, the pilot relinquished the flight controls to the flight instructor. The flight instructor elected to continue the autorotation to a field. The instructor added that during the touch-down, the right front skid "sunk into the soft field", the helicopter's nose dropped and when the tail section rose, the main rotor blades severed the tail-boom. The helicopter subsequently rolled onto its side.

The pilot stated that, "they heard and then felt a vibration and a loud bang or explosion" that came from the aft section of the helicopter and so he entered an autorotation.

A Federal Aviation Administration (FAA) inspector, who responded to the site, reported that the helicopter's main rotor blades severed the tail-boom during the landing.

An examination of the helicopter was conducted by an FAA inspector and a technical representative from the airframe manufacturer. During the inspection the engine was started and ran normally. The transmission rotated with oil visible in the sight gauge. The drive system's "V-belts" appeared undamaged and functional; the clutch actuator operated when electrical power was applied. The engine's lower coupling to lower pulley driveshaft was intact and the splined fittings were undamaged. The helicopter's cyclic and collective controls exhibited continuity through the range of motion. The main and tail rotor blades were examined; the tail rotor blades appeared undamaged. The main rotor blades displayed various degrees of damage, consistent with a sudden stoppage at low rotor RPM and blade impact with the tail-boom and ground.

The reason for the loud noise and vibration was not found.

Pilot Information

Certificate:	Commercial	**Age:**	55,Male
Airplane Rating(s):	None	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	March 30, 2009
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	June 20, 2008
Flight Time:	595 hours (Total, all aircraft), 595 hours (Total, this make and model), 534 hours (Pilot In Command, all aircraft), 11 hours (Last 90 days, all aircraft), 8 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Flight instructor Information

Certificate:	Commercial	**Age:**	25,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Helicopter	**Second Pilot Present:**	Yes
Instructor Rating(s):	Helicopter; Instrument helicopter	**Toxicology Performed:**	No
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	January 1, 2009
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	Hughes	**Registration:**	N58163
Model/Series:	269C	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	740334
Landing Gear Type:	Skid	**Seats:**	3
Date/Type of Last Inspection:	August 26, 2009 Annual	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	2310 Hrs as of last inspection	**Engine Manufacturer:**	LYCOMING
ELT:	Not installed	**Engine Model/Series:**	I0360 SER
Registered Owner:	CAVALEA CONTINENTAL FREIGHT INC	**Rated Power:**	180 Horsepower
Operator:	CAVALEA CONTINENTAL FREIGHT INC	**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:	1200 ft AGL	**Visibility**	7 miles
Lowest Ceiling:	1200 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	14 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	150°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.04 inches Hg	**Temperature/Dew Point:**	21°C
Precipitation and Obscuration:	In the vicinity - Patches - Fog		
Departure Point:	Arapahoe, NE (37V)	**Type of Flight Plan Filed:**	None
Destination:	Colorado Plains, CO (AKO)	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	40.300086,-99.890396(est)

Administrative Information

Investigator In Charge (IIC):	Hatch, Craig
Additional Participating Persons:	Pete Kelly; FAA FSDO; Scottsdale, AZ Adrian Booth; Boeing Helicopters; Mesa, AZ
Original Publish Date:	April 22, 2010
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=74651