



National Transportation Safety Board Aviation Accident Final Report

Location:	Arapahoe, NE	Accident Number:	CEN09LA558
Date & Time:	09/02/2009, 1040 CDT	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	Not determined - Unknown/Not determined (Cause)
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Factual Information

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.

History of Flight

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

Pilot Information

Certificate:	Commercial	Age:	55, Male
Airplane Rating(s):	None	Seat Occupied:	Left
Other Aircraft Rating(s):	Helicopter	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 With Waivers/Limitations	Last Medical Exam:	03/30/2009
Occupational Pilot:	No	Last Flight Review or Equivalent:	06/20/2008
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:	Seatbelt, Shoulder harness
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 Medical Exam:	01/01/2009
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	HUGHES	Registration:	N58163
Model/Series:	269C	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	740334
Landing Gear Type:	Skid	Seats:	3
Date/Type of Last Inspection:	08/26/2009, Annual	Certified Max Gross Wt.:	
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	2310 Hours	Engine Manufacturer:	LYCOMING
ELT:	Not installed	Engine Model/Series:	I0360 SER
Registered Owner:	CAVALEA CONTINENTAL FREIGHT INC	Rated Power:	180 hp
Operator:	CAVALEA CONTINENTAL FREIGHT INC	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Observation Facility, Elevation:		Observation Time:	
Distance from Accident Site:		Condition of Light:	Day
Direction from Accident Site:		Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Partial Obscuration / 1200 ft agl	Temperature/Dew Point:	21 °C
Lowest Ceiling:	Obscured / 1200 ft agl	Visibility	7 Miles
Wind Speed/Gusts, Direction:	14 knots, 150°	Visibility (RVR):	
Altimeter Setting:	30.04 inches Hg	Visibility (RVV):	
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:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None		

Administrative Information

Investigator In Charge (IIC):	Craig Hatch	Adopted Date:	04/22/2010
Additional Participating Persons:	Pete Kelly; FAA FSDO; Scottsdale, AZ Adrian Booth; Boeing Helicopters; Mesa, AZ		
Publish Date:	04/22/2010		
Investigation Docket:	http://dms.ntsb.gov/pubdms/search/dockList.cfm?mKey=74651		

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