



Aviation Investigation Final Report

Location:	Topanga, California	Accident Number:	LAX08LA183
Date & Time:	June 14, 2008, 19:00 Local	Registration:	N168AG
Aircraft:	Robinson R44 II	Aircraft Damage:	Substantial
Defining Event:	Part(s) separation from AC	Injuries:	3 Minor
Flight Conducted Under:	Part 91: General aviation - Other work use		

Analysis

About 15 minutes into the helicopter's local sightseeing flight, the pilot heard a loud noise and the helicopter began to rotate to the right. He entered an autorotation and aimed for a trail in the hilly terrain the helicopter was passing over. As he flared the helicopter and pulled up on the collective to terminate the autorotation, the helicopter again began to rotate to the right. The helicopter impacted the trail and rolled over, coming to rest on its right side. Examination revealed that the tail rotor gearbox had separated from the tail boom. With the exception of the outboard sections of both tail rotor blades, none of the tail rotor components were recovered. The blade sections were found along the helicopter's flight path about 1/2-mile from the accident site. The two blade sections both displayed signatures consistent with the tail rotor contacting the helicopter's vertical stabilizer after the tail rotor gear box separated from the tail boom. The reason for the separation of the tail rotor gear box could not be determined due to the missing parts.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The in-flight separation of the tail rotor gear box for an undetermined reason. Contributing to the accident was the hilly terrain, which was unsuitable for a forced landing.

Findings

Aircraft	Tail rotor gearbox - Not specified
Environmental issues	Mountainous/hilly terrain - Contributed to outcome

Factual Information

History of Flight

Enroute-cruise	Part(s) separation from AC (Defining event)
Autorotation	Off-field or emergency landing
Landing-flare/touchdown	Roll over

On June 14, 2008, about 1900 Pacific daylight time, a Robinson R44 II helicopter, N168AG, sustained substantial damage when it rolled over during a forced landing in Topanga Canyon, Topanga, California. The airline transport pilot and the two passengers received minor injuries. The helicopter was operated by Adventure Helicopter Tours, Los Angeles, California, as a 14 Code of Federal Regulations Part 91 sightseeing flight. Visual meteorological conditions prevailed, and a company flight plan was filed for the local flight that departed Whiteman Airport, Los Angeles, about 1845.

The pilot reported that the flight departed Whiteman Airport and headed towards the coast. About 15 minutes into the flight, he heard a "huge bang," and the helicopter began to rotate to the right. He entered an autorotation and aimed for a trail. As he flared the helicopter and pulled up on the collective to terminate the autorotation, the helicopter again began to rotate to the right. The helicopter impacted the trail and rolled over coming to rest on its right side.

The helicopter was examined at the accident site by a Federal Aviation Administration (FAA) inspector and after its recovery to the operator's hangar by the National Transportation Safety Board investigator-in-charge (IIC) and representatives of Robinson Helicopter Company. The fuselage was dented, deformed, and scratched. The main rotor blades remained attached to the rotor hub and were bent and buckled. The tail boom was separated into three sections: a forward section, measuring about 3 feet long, which remained attached to the fuselage; a middle section, measuring about 10 feet long; and an aft section, consisting of about 4 inches of tail boom with the horizontal and vertical stabilizers attached, but missing the tail rotor gear box and tail rotor hub and blade assembly. The middle section of tail boom was found with the fuselage and remained partially attached by wires. The aft section of tail boom was found about 70 feet from the fuselage. There was no evidence of main rotor contact with the tail boom.

The tail rotor gear box was not recovered. With the exception of the outboard sections of both tail rotor blades, none of the tail rotor components were recovered. The blade sections were found along the helicopter's flight path about 1/2 mile from the accident site. The two blade sections both displayed leading edge impact damage, paint transfers, and deformation, which corresponded to damage to the lower trailing edge of the helicopter's vertical stabilizer. The geometry of the blade strikes indicated they occurred after the tail rotor gear box separated from the tail boom.

At the time of the accident, the helicopter had accumulated 973.3 hours total flight time. Its most recent 100-hour inspection was completed on April 24, 2008, at a total time of 878.2 hours. Review of the helicopter's maintenance records revealed that on August 4, 2007, at an unknown total time, a new tail skid was installed. The records indicated that on March 5, 2007, at a total time of 501.6 hours, the tail rotor assembly was removed "due to damage" and sent to Robinson Helicopter Company for repairs. The repair tag for the tail rotor assembly indicated that on March 13, 2007, a visual inspection was performed and one tail rotor blade was replaced. The tail rotor assembly was reinstalled on the helicopter on March 19, 2007, at a helicopter total time of 513.3 hours.

Pilot Information

Certificate:	Airline transport; Commercial; Flight instructor	Age:	48, Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	Airplane; Helicopter	Second Pilot Present:	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Helicopter; Instrument airplane; Instrument helicopter	Toxicology Performed:	No
Medical Certification:	Class 2 With waivers/limitations	Last FAA Medical Exam:	March 7, 2008
Occupational Pilot:	No	Last Flight Review or Equivalent:	April 23, 2008
Flight Time:	6028 hours (Total, all aircraft), 100 hours (Total, this make and model), 6000 hours (Pilot In Command, all aircraft), 140 hours (Last 90 days, all aircraft), 72 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Robinson	Registration:	N168AG
Model/Series:	R44 II	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	10938
Landing Gear Type:	Skid	Seats:	4
Date/Type of Last Inspection:	April 24, 2008 100 hour	Certified Max Gross Wt.:	2500 lbs
Time Since Last Inspection:	95 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	973 Hrs at time of accident	Engine Manufacturer:	Lycoming
ELT:	Installed, not activated	Engine Model/Series:	IO-540
Registered Owner:	Air & Land Ventures Inc.	Rated Power:	205 Horsepower
Operator:	Air & Land Ventures Inc.	Operating Certificate(s) Held:	None
Operator Does Business As:	Adventure Helicopter Tours	Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	BUR,778 ft msl	Distance from Accident Site:	15 Nautical Miles
Observation Time:	18:53 Local	Direction from Accident Site:	225°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	6 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	130°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.89 inches Hg	Temperature/Dew Point:	27°C / 9°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Los Angeles, CA (WHP)	Type of Flight Plan Filed:	Company VFR
Destination:	(WHP)	Type of Clearance:	VFR
Departure Time:	18:45 Local	Type of Airspace:	

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:	2 Minor	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	3 Minor	Latitude, Longitude:	34.113609,-118.640274

Administrative Information

Investigator In Charge (IIC):	Struhsaker, Georgia
Additional Participating Persons:	Jerry Dees; Federal Aviation Administration; Van Nuys, CA Thom Webster; Robinson Helicopter Company; Torrance, CA
Original Publish Date:	March 23, 2009
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=68229

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).