



Aviation Investigation Final Report

Location:	Centerville, Louisiana	Accident Number:	CEN12FA139
Date & Time:	January 19, 2012, 09:01 Local	Registration:	N369TL
Aircraft:	Robinson R44 II	Aircraft Damage:	Substantial
Defining Event:	Loss of control in flight	Injuries:	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Witnesses saw the helicopter circling at a low altitude and saw the pilot wave at them. None of the witnesses saw the impact, but they heard the impact and saw smoke. They responded to the site and used portable fire extinguishers to extinguish the fire. Examination of the accident site revealed that the helicopter struck several trees and fell straight to the ground in a nose-low attitude, coming to rest on its right side. Examination of the airframe and engine revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation. Impact signatures were consistent with the engine developing power at impact, and it is likely that, at the time of impact, the helicopter was in a steep descent consistent with settling with power.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot allowed the helicopter to settle with power while maneuvering at low altitude.

Findings

Personnel issues	Aircraft control - Pilot
Aircraft	Prop/rotor parameters - Not attained/maintained

Factual Information

History of Flight

Maneuvering-low-alt flying	Loss of control in flight (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On January 19, 2012, at 0901 central standard time, a Robinson R44 II, N369TL, collided with trees while maneuvering at low altitude and impacted the Belle Isle salt dome, about 12 miles south of Centerville, Louisiana. There was a fire after impact. The pilot and the pilot-rated passenger were fatally injured. The helicopter was substantially damaged. The helicopter was registered to and operated by CENAC Marine Services, LLC, Houma, Louisiana, under the provisions of 14 Code of Federal Regulations (CFR) Part 91 as a personal flight. Visual meteorological conditions (VMC) prevailed at the time of the accident, and no flight plan had been filed. The local flight originated from Houma (KHUM), Louisiana, at 0827.

Several witnesses told St. Mary’s Parish sheriff’s deputies that they saw the helicopter circling at a low altitude. They said the left seat pilot waved at them. None of the witnesses saw the impact, but heard the impact and saw smoke. They responded to the site and used portable fire extinguishers to extinguish the fire.

PERSONNEL (CREW) INFORMATION

According to the helicopter owner/operator the pilot-in-command, age 40, was seated in the left seat. He held an airline transport pilot certificate with airplane multiengine land rating, commercial pilot privileges with airplane single-engine land and rotorcraft-helicopter ratings, and a flight instructor certificate with airplane single/multiengine and instrument ratings. He was type rated in the Beech 300/350 King Air, Hawker Beechjet 400, Cessna 500 Citation, and the Mitsubishi MU-300 Diamond. He held a first class airman medical certificated, dated June 24, 2011, with no restrictions or limitations. According to his employer, the pilot had logged 8,700 total flight hours and 260 hours in the Robinson R44, of which 215 hours were as pilot-in-command. His list flight review was accomplished in the Beech 350 King Air on December 6, 2011.

The second pilot, age 43, was seated in the right seat. He held a private pilot certificate with a rotorcraft-helicopter rating. He also held a third class airman medical certificate, dated April 15, 2010, with the restriction that he wear corrective lenses while exercising the privileges of his airman certificate. According to his employer, the pilot had logged 450 total flight hours, the majority of which was in the Bell 47 helicopter. He had logged 18.9 hours in the Robinson

R44, his last flight being on May 5, 2011. He had also flown the Brantley helicopter.

AIRCRAFT INFORMATION

N369TL (serial number 11055), a model R44 II, was manufactured by the Robinson Helicopter Company on January 16, 2006. It was powered by a Lycoming IO-540-AE1A5 engine (serial number L-30804-48A), rated at 300 horsepower. According the helicopter maintenance records, the last 100-hour/annual inspection was performed on March 31, 2011, at a total time of 461.5 hours.

METEOROLOGICAL INFORMATION

The following METARs (Aviation Routine Weather Report) were recorded at Houma (KHUM) and Patterson (KPTN), Louisiana:

KHUM 0850: Wind, 020 degrees at 3 knots; visibility, 6 miles, mist; ceiling, 1,800 feet broken; temperature, 12 degrees Celsius (C.); dew point, 11 degrees C.; altimeter, 30.15 inches of Mercury.

KPTN 0855: Wind, 070 degrees at 3 knots; visibility, 10 miles; ceiling, 2,400 feet overcast; temperature, 12 degrees C.; dew point, 11 degrees C.; altimeter, 30.14 inches of Mercury.

WRECKAGE AND IMPACT INFORMATION

The accident site was situated at an elevation of 6 feet msl (above mean sea level), encompassing a perimeter of about 500 feet. The on-scene investigation revealed the helicopter struck several trees and fell straight to the ground in a nose-low attitude, coming to rest on its right side. A post-impact fire ensued. The tail boom and tail rotor blades remained attached to the helicopter, and 3-foot stubs of the main rotor blades remained attached. The tail rotor drive shaft was intact and, when turned by hand, continuity was observed. Nearby was a 2-foot gash deep in the ground, about the length of a main rotor blade. The helicopter sustained extensive thermal damage from the tail boom forward. All control rods and linkages remained attached to the rotor hub. All breaks were consistent with overload fractures.

The instrument panel was destroyed, but the vertical speed indicator registered 2,600 feet per minute descent, and the attitude indicator revealed a 35-degree left turn and nose-down attitude.

Impact signatures were consistent with the helicopter in a steep descent and the engine operating at the time of impact.

MEDICAL AND PATHOLOGICAL INFORMATION

Autopsies were performed on both pilots by the Louisiana Forensic Center. According to their reports, both pilots succumbed to blunt force injuries.

Toxicology protocols were conducted by FAA's Civil Aeromedical Institute (CAMI). According to their reports, none of the pilot's specimens were suitable for analysis due to putrefaction. The pilot-rated passenger had no carbon monoxide, cyanide or ethanol in the blood (cavity), but amlodipine, pravastatin, and valsartan were detected in the liver and blood (cavity). According to FAA's Forensic Toxicology Drug Information website, amlodipine (Norvasc®) is a prescription calcium channel blocker medication used to treat high blood pressure and angina, pravastatin (Pravachol®) is a prescription HMG-CoA reductase inhibitor to reduce cholesterol biosynthesis and treat elevated blood lipids, and valsartan (Diovan®) is a prescription angiotensin II receptor blocker (ARB) that acts on the AT1 receptor subtype and is used to control high blood pressure.

TESTS AND RESEARCH

The engine was examined at Air Salvage of Dallas in Lancaster, Texas, under the auspices of the National Transportation Safety Board. Examination revealed that the intake and exhaust valves were seized due to thermal damage to the engine. There were no pre-impact anomalies with the engine which would have precluded normal operation.

The three servos were examined at the Robinson Helicopter Company under the auspices of the National Transportation Safety Board. Thermal damaged had compromised most of the servo seals. No foreign debris, scoring, or witness marks were observed on either spool or metering edges of the sleeve.

ADDITIONAL INFORMATION

The Federal Aviation Administration (FAA) inspector who participated in the investigation, a former U.S. Army helicopter pilot and an FAA helicopter pilot examiner, submitted a written statement in which he noted what appeared to be a high velocity impact, large grooves in the ground indicating engine power at impact, and a near vertical descent consistent with "settling with power."

The following is based on FAA's "Helicopter Flying Handbook," (FAA-H-8083-21, Chapter 11, p. 11-13):

"Vortex ring state" is an aerodynamic condition in which a helicopter may be in a vertical descent with 20 percent up to maximum power applied, and little or no climb performance.

“Settling with power” occurs when the helicopter keeps settling even though full engine power is applied. Main rotor tip vortices generate drag and degrade airfoil efficiency. As long as the tip vortices are small, their only effect is a small loss in main rotor efficiency. However, when the helicopter begins to descend vertically, it settles into its own downwash, which greatly enlarges the tip vortices. In this vortex ring state, most of the power developed by the engine is wasted in circulating the air in a doughnut pattern around the rotor. A vortex ring state may be entered during any maneuver that places the main rotor in a condition of descending in a column of disturbed air and low forward airspeed. Airspeeds that are below translational lift airspeeds are within this region of susceptibility to settling with power aerodynamics. This condition is sometimes seen during quick-stop type maneuvers or during recovery from autorotation.

Some of the situations that are conducive to a settling with power condition are hovering above ground effect altitude, specifically attempting to hover out of ground effect (OGE) at altitudes above the hovering ceiling of the helicopter, attempting to hover OGE without maintaining precise altitude control, pinnacle or rooftop helipads when the wind is not aligned with the landing direction, and downwind and steep power approaches in which airspeed is permitted to drop below 10 knots, depending on the type of helicopter.

Pilot Information

Certificate:	Airline transport; Commercial; Flight instructor	Age:	40, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	Toxicology Performed:	Yes
Medical Certification:	Class 1 Without waivers/limitations	Last FAA Medical Exam:	June 24, 2011
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	December 6, 2011
Flight Time:	8700 hours (Total, all aircraft), 260 hours (Total, this make and model), 4384 hours (Pilot In Command, all aircraft), 85 hours (Last 90 days, all aircraft)		

Pilot Information

Certificate:	Private	Age:	43, Male
Airplane Rating(s):	None	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 With waivers/limitations	Last FAA Medical Exam:	April 15, 2010
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	450 hours (Total, all aircraft), 450 hours (Total, this make and model), 25 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Robinson	Registration:	N369TL
Model/Series:	R44 II	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	11055
Landing Gear Type:	Skid	Seats:	2
Date/Type of Last Inspection:	March 31, 2011 100 hour	Certified Max Gross Wt.:	2500 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	462 Hrs as of last inspection	Engine Manufacturer:	Lycoming
ELT:	Installed, not activated	Engine Model/Series:	IO-540-AE1A5
Registered Owner:	CENAC Marine Services, LLC	Rated Power:	300 Horsepower
Operator:	CENAC Marine Services, LLC	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KPTN,9 ft msl	Distance from Accident Site:	15 Nautical Miles
Observation Time:	08:55 Local	Direction from Accident Site:	20°
Lowest Cloud Condition:		Visibility	10 miles
Lowest Ceiling:	Overcast / 2400 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	3 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	70°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.13 inches Hg	Temperature/Dew Point:	12°C / 11°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Houma, LA (KHUM)	Type of Flight Plan Filed:	None
Destination:	Houma, LA (KHUM)	Type of Clearance:	None
Departure Time:	08:27 Local	Type of Airspace:	Class G

Wreckage and Impact Information

Crew Injuries:	2 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	On-ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Fatal	Latitude, Longitude:	29.5275,-91.395553

Administrative Information

Investigator In Charge (IIC):	Scott, Arnold
Additional Participating Persons:	Terence D Macon; FAA Flight Standards District Office; Baton Rouge, LA Thom Webster; Robinson Helicopters; Torrance, CA John Butler; Lycoming Engines; Arlington, TX
Original Publish Date:	August 15, 2012
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=82704

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](#).