



Aviation Investigation Final Report

Location:	Destin, Florida	Accident Number:	ERA12LA346
Date & Time:	May 19, 2012, 15:40 Local	Registration:	N444WT
Aircraft:	ROBINSON HELICOPTER R44	Aircraft Damage:	Substantial
Defining Event:	Loss of engine power (partial)	Injuries:	3 None
Flight Conducted Under:	Part 91: General aviation - Other work use		

Analysis

The helicopter reached about 200 feet above ground level in the initial climb when the pilot noticed that the engine needle in the dual tachometer (engine/main rotor rpm) had "spiked" and then remained "at the top of the gauge." The pilot turned the helicopter around to return to the airport, and, during the turn, the low rotor rpm warning alarm sounded. The pilot responded by lowering the collective control and increasing throttle but then determined that an airport landing could not be completed because the helicopter had already lost altitude. The pilot selected a forced landing area in a sand pit and responded to another low rotor rpm alarm by again lowering the collective. She attempted to cushion the landing with the available rotor rpm, but the helicopter landed hard, and the main rotor blades severed the tailboom. Examination of the helicopter revealed that the engine had a stuck (open) number 5 exhaust valve caused by buildup of oil carbon deposits. This is an issue with the Robinson Helicopters if the engine is not cooled down properly after flight. Air tour operations seem to be prone to carbon buildup mainly due to quick multiple shutdowns. The operator has established a postflight cool down procedure to prevent further problems. On January 19, 1988, Textron Lycoming published Service Letter No. L197A, Recommendations to Avoid Valve Sticking. The guidance offered included, "Rapid engine cool down from low power altitude changes, low power landing approach and/or engine shutdown too soon after landing or ground runs should be avoided."

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The partial loss of engine power due to a stuck (open) exhaust valve in the No. 5 cylinder. Contributing to the accident was the operator's failure to follow the engine manufacturer's directives concerning cooling of the engine after flight.

Findings

Aircraft	Recip eng cyl section - Damaged/degraded	
Environmental issues	Sloped/uneven terrain - Effect on operation	
Aircraft	(general) - Incorrect use/operation	
Personnel issues	Use of policy/procedure - Flt operations/dispatcher	

Factual Information

History of Flight	
Initial climb	Loss of engine power (partial) (Defining event)
Emergency descent	Off-field or emergency landing
Autorotation	Hard landing

On May 19, 2012, about 1540 central daylight time, a Robinson R44 helicopter, N444WT, was substantially damaged during a forced landing after takeoff from Destin-Fort Walton Beach Airport (DTS), Destin, Florida. The certificated commercial pilot and two passengers were not injured. Visual meteorological conditions prevailed, and a company flight plan was filed for the flight. The local sightseeing flight was conducted under the provisions of Title 14 Code of Federal Regulations Part 91.

According to the pilot, the helicopter had reached approximately 200 feet above ground level (agl) in the initial climb when she noticed that the engine needle in the dual tachometer (engine/main rotor rpm) had "spiked" and then remained "at the top of the gauge." She turned that helicopter to return to the airport, and during the turn, the low rotor rpm warning horn sounded. The pilot responded by lowering the collective control and increasing throttle, but then determined that an airport landing could not be completed due to the resultant loss of altitude.

The pilot selected a forced landing area in a sand pit, and responded to another low rotor rpm alarm by again lowering the collective. She attempted to cushion the landing with the available rotor rpm, but the helicopter landed hard, and the main rotor blades severed the tailboom. The helicopter came to rest upright, and the occupants egressed without injury.

In interviews and written statements provided to the local sheriff's department, the passengers each stated that the helicopter was "leaning to the right" during the takeoff, and that the helicopter "beeped and descended" twice before it landed hard in the sand.

The helicopter was removed from the site, and a detailed examination of the wreckage was scheduled.

According to Federal Aviation Administration (FAA) and operator records, the helicopter was manufactured in 2000 and had accrued 1,668 total aircraft hours as of the date of the accident. Its most recent annual inspection was completed April 12, 2012.

The pilot held an FAA commercial pilot certificate with ratings for rotorcraft-helicopter and instrument helicopter. She also held a flight instructor certificate with ratings for rotorcraft-helicopter and instrument helicopter. Her most recent FAA second class medical certificate

was issued March 16, 2012. The pilot reported 433 total hours of flight experience, of which 143 hours were in the accident helicopter make and model.

The helicopter was examined on June 6 and 7, 2012 by FAA inspectors, and the results of that examination were summarized in an email from one of the inspectors who stated, "The engine had a stuck (open) number #5 exhaust valve caused by buildup of oil carbon deposits. This is an issue with the Robinson Helicopters if the engine is not cooled down properly after flight. Air tour operations seem to be prone to carbon buildup mainly due to quick multiple shutdowns. The operator has established a post flight cool down procedure to prevent further problems."

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Pilot Information

Certificate:	Commercial; Flight instructor	Age:	38,Female
Airplane Rating(s):	None	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	Helicopter	Second Pilot Present:	No
Instructor Rating(s):	Helicopter; Instrument helicopter	Toxicology Performed:	No
Medical Certification:	Class 2 Without waivers/limitations	Last FAA Medical Exam:	March 16, 2012
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	April 17, 2012
Flight Time:	433 hours (Total, all aircraft), 143 hours (Total, this make and model), 336 hours (Pilot In Command, all aircraft), 22 hours (Last 90 days, all aircraft), 12 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	ROBINSON HELICOPTER	Registration:	N444WT
Model/Series:	R44	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	0895
Landing Gear Type:	Skid	Seats:	4
Date/Type of Last Inspection:	April 12, 2012 100 hour	Certified Max Gross Wt.:	2400 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	1668 Hrs at time of accident	Engine Manufacturer:	LYCOMING
ELT:	Installed, not activated	Engine Model/Series:	VO-540
Registered Owner:	Timberview Helicopters	Rated Power:	250 Horsepower
Operator:	Timberview Helicopters	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	DTS,22 ft msl	Distance from Accident Site:	5 Nautical Miles
Observation Time:	15:53 Local	Direction from Accident Site:	360°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	9 knots / 16 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	90°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.96 inches Hg	Temperature/Dew Point:	29°C / 13°C
Precipitation and Obscuration:	No Obscuration; No Precipitat	tion	
Departure Point:	Destin, FL (KDTS)	Type of Flight Plan Filed:	Company VFR
Destination:	Destin, FL (KDTS)	Type of Clearance:	VFR
Departure Time:	15:40 Local	Type of Airspace:	

Airport Information

Airport:	Destin KDTS	Runway Surface Type:	
Airport Elevation:	22 ft msl	Runway Surface Condition:	Dry
Runway Used:	14	IFR Approach:	None
Runway Length/Width:	5001 ft / 100 ft	VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	2 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	3 None	Latitude, Longitude:	30.399906,-86.490814(est)

Administrative Information

Investigator In Charge (IIC):	Rayner, Brian
Additional Participating Persons:	George Colbow; FAA/FSDO; Birmingham, AL
Original Publish Date:	May 9, 2013
Last Revision Date:	
Investigation Class:	<u>Class</u>
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=83707

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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 <u>here</u>.