Aviation Investigation Final Report

Location:	Canyon Lake, Texas	**Accident Number:**	DFW08CA177
Date & Time:	July 5, 2008, 16:00 Local	**Registration:**	N804DF
Aircraft:	Robinson R44 II	**Aircraft Damage:**	Substantial
Defining Event:	Loss of tail rotor effectiveness	**Injuries:**	1 Minor, 2 None
Flight Conducted Under:	Part 91: General aviation - Aerial observation		

Analysis

The commercial pilot was conducting a photo flight with himself and two passengers in the four seat helicopter. The helicopter had been in a zero airspeed out of ground effect hover at approximately 40 to 50 feet above the ground for about 15 seconds when the pilot applied power to begin a vertical climb. According to the pilot, he then suddenly and without warning lost directional control, the helicopter began to spin nose right, and his application of full left pedal had no effect. The pilot initiated an autorotation and the helicopter landed hard on rough rocky sloping terrain between several trees. The crash caused substantial damage to the fuselage and airframe when the left skid gear partially collapsed and penetrated into the left rear passenger cabin floor area. The upper pylon was noticeably bent and wrinkled, and both main rotor blades were damaged. An on-scene investigation by an FAA maintenance inspector confirmed continuity and no apparent damage to the flight controls. There was no post-crash fire and the pilot and front seat passenger reported no injuries, but the left rear seat passenger suffered minor injuries and had to be carried out of the aircraft. The pilot reported the surface winds were light and variable, visibility 10 statute miles with scattered clouds at 3,000 feet, a temperature of 88 degrees, and an altimeter setting of 30.01 inches of mercury.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A total loss of tail rotor effectiveness. Contributing to the accident was the pilot's improper decision to operate inside the height velocity curve.

Findings

Personnel issues	Decision making/judgment - Pilot
Aircraft	Prop/rotor parameters - Capability exceeded
Aircraft	(general) - Not specified

Factual Information

History of Flight

Maneuvering-hover	Loss of tail rotor effectiveness (Defining event)

Pilot Information

Certificate:	Commercial	**Age:**	60,Male
Airplane Rating(s):	None	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	November 1, 2007
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	October 1, 2007
Flight Time:	731 hours (Total, all aircraft), 113 hours (Total, this make and model), 569 hours (Pilot In Command, all aircraft), 49 hours (Last 90 days, all aircraft), 21 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Robinson	**Registration:**	N804DF
Model/Series:	R44 II	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	11265
Landing Gear Type:	Skid	**Seats:**	4
Date/Type of Last Inspection:	June 1, 2008 100 hour	**Certified Max Gross Wt.:**	2500 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	421 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-540-AE1A5
Registered Owner:	Royal Aeronautical Services USA LLC	**Rated Power:**	205 Horsepower
Operator:	Helicopter Tours of Texas	**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:	3000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/ None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.01 inches Hg	**Temperature/Dew Point:**	31°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Gruene, TX	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	15:46 Local	**Type of Airspace:**	

Airport Information

Airport:	CANYON LAKE 34TS	**Runway Surface Type:**	
Airport Elevation:	940 ft msl	**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor, 1 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor, 2 None	**Latitude, Longitude:**	29.916944,-98.305557

Administrative Information

Investigator In Charge (IIC):	Latson, Thomas
Additional Participating Persons:	Faye S Makarsky; San Antonio FSDO
Original Publish Date:	August 28, 2008
Last Revision Date:	
Investigation Class:	Class
Note:	This accident report documents the factual circumstances of this accident as described to the NTSB.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=68395