



# Aviation Investigation Final Report

<b>Location:</b>	Corcoran, Minnesota	<b>Accident Number:</b>	CEN13LA115
<b>Date &amp; Time:</b>	December 23, 2012, 10:30 Local	<b>Registration:</b>	N27AT
<b>Aircraft:</b>	ROBINSON HELICOPTER R22 BETA	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Loss of control on ground	<b>Injuries:</b>	1 Minor
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

## Analysis

Before landing, the pilot hovered the helicopter about 10 feet above the ground to see if tarps covering the north half of the concrete helipad would move, and he then decided to continue the landing. The helicopter approached from the north, which placed the tail rotor over the tarps. The area south of the helipad was free of obstructions. While the pilot was shutting down the helicopter after landing, the helicopter made an uncommanded counterclockwise rotation of about 40 degrees. The pilot applied corrective pedal input with no response. The helicopter then rotated about three full revolutions before the tail boom and main rotors struck a nearby parked trailer, and a fire ensued. Postaccident examination of the helicopter did not reveal any preimpact anomalies; however, the examination was limited due to extensive impact and postimpact fire damage. Examination of the accident site revealed several cuts in the tarp in the area where the tail boom was positioned during landing. Although the pilot reported that the tarp did not impact the tail rotor, the evidence suggests that the tarp was lifted into the tail rotor during the shutdown, which likely caused damage to the tail rotor blades and resulted in a loss of tail rotor authority and the subsequent uncommanded rotation. Further, because the area south of the pad was free of obstructions and the reported wind was variable at 2 knots, the pilot could have landed the helicopter facing north, which would have placed the tail rotor over the unobstructed ground south of the helipad.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's improper decision to land the helicopter in a position that placed the tail rotor near tarps, which resulted in the tarps being lifted into the tail rotor, subsequent tail rotor damage, a loss of tail rotor authority, and an uncommanded tail rotor rotation.

### Findings

<b>Personnel issues</b>	Decision making/judgment - Pilot
<b>Environmental issues</b>	Debris/dirt/foreign object - Effect on equipment
<b>Aircraft</b>	(general) - Damaged/degraded

## Factual Information

### History of Flight

**Standing-engine(s) shutdown**      Loss of control on ground (Defining event)

On December 23, 2012, about 1030 central standard time, a Robinson R22 Beta helicopter, N27AT, sustained substantial damage when the tail and main rotor struck a parked trailer after landing at a private residence near Corcoran, Minnesota. The helicopter subsequently caught fire and burned. The private pilot received minor injuries. The helicopter sustained damage to the structure supporting the main rotor gearbox and tail boom, the main rotors, the main rotor gearbox and the cabin. The aircraft was registered to the pilot and another individual and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed for the flight, which was not operated on a flight plan. The flight originated from a private heliport near St. Michael, Minnesota about 1025.

The pilot reported that the landing was executed to a large concrete pad that had been poured on his son's property for a building to be erected. He said that there were tarps covering the north half of the pad and he saw boards and stones holding the tarps in position. There was a trailer parked on the west side of the pad. He elected to land on the southeast part of the pad and approached from the north. The pilot stated that during his landing approach, he stopped and hovered about 10 feet above the ground to make sure the tarps would not move due to the helicopter's downwash. He said that he proceeded to make a normal landing and as he was preparing to shut down, the helicopter rotated about 30 to 40 degrees counterclockwise. The pilot applied corrective pedal input with no response. The helicopter then rotated about three full revolutions before the tail boom and main rotors struck a trailer that was parked near the west end of the concrete pad. Subsequently, the main rotor gearbox separated and came to rest in the passenger seat. The fuel tanks ruptured and a fire erupted. The pilot was able to extricate himself from the burning helicopter and remove his clothing that was on fire. He suffered burns to his face and head and experienced soreness for several days following the accident.

Examination of the accident scene revealed several cuts in the tarps that were covering the north half of the concrete landing pad. The area where the cuts were found corresponded with the area where the tail rotor of the helicopter would have been positioned for the described landing. The area to the south of the pad was clear of obstructions. Examination of the helicopter and control systems was conducted and no preimpact anomalies were noted, however, the examination was limited due to the extensive damage from the impact and the postimpact fire.

The pilot reported the wind as variable at 2 knots.

During a telephone conversation with the pilot, he stated that he did not believe that the tarp could have struck the tail rotor. He mentioned that he did see 2 small rips in the tarp in the area where the tail rotor would have been, but he also mentioned that the tarps had many small rips throughout.

## Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	68
<b>Airplane Rating(s):</b>	None	<b>Seat Occupied:</b>	Right
<b>Other Aircraft Rating(s):</b>	Helicopter	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	None	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 3 With waivers/limitations	<b>Last FAA Medical Exam:</b>	October 27, 2011
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	700 hours (Total, all aircraft), 650 hours (Pilot In Command, all aircraft), 6 hours (Last 90 days, all aircraft), 2 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	ROBINSON HELICOPTER	<b>Registration:</b>	N27AT
<b>Model/Series:</b>	R22 BETA	<b>Aircraft Category:</b>	Helicopter
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	1151
<b>Landing Gear Type:</b>	Skid	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	June 6, 2012 100 hour	<b>Certified Max Gross Wt.:</b>	1370 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	1125 Hrs at time of accident	<b>Engine Manufacturer:</b>	LYCOMING
<b>ELT:</b>	Not installed	<b>Engine Model/Series:</b>	0-320 SERIES
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	180 Horsepower
<b>Operator:</b>	On file	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>		<b>Distance from Accident Site:</b>	
<b>Observation Time:</b>		<b>Direction from Accident Site:</b>	
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	2 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>		<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>		<b>Temperature/Dew Point:</b>	-4°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	St. Michael, MN (PVT )	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Corcoran, MN	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	10:25 Local	<b>Type of Airspace:</b>	

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Minor	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	On-ground
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 Minor	<b>Latitude, Longitude:</b>	45.148056,-93.538887

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Brannen, John
<b>Additional Participating Persons:</b>	Dennis Beattie; FAA - Minneapolis FSDO; Minneapolis, MN
<b>Original Publish Date:</b>	November 13, 2014
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	
<b>Investigation Docket:</b>	<a href="https://data.ntsb.gov/Docket?ProjectID=85893">https://data.ntsb.gov/Docket?ProjectID=85893</a>

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