



Aviation Investigation Final Report

Location:	Corcoran, Minnesota	Accident Number:	CEN13LA115
Date & Time:	December 23, 2012, 10:30 Local	Registration:	N27AT
Aircraft:	ROBINSON HELICOPTER R22 BETA	Aircraft Damage:	Substantial
Defining Event:	Loss of control on ground	Injuries:	1 Minor
Flight Conducted Under:	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

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

Factual Information

History of Flight

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

Certificate:	Private	Age:	68
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 3 With waivers/limitations	Last FAA Medical Exam:	October 27, 2011
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	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

Aircraft Make:	ROBINSON HELICOPTER	Registration:	N27AT
Model/Series:	R22 BETA	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	1151
Landing Gear Type:	Skid	Seats:	2
Date/Type of Last Inspection:	June 6, 2012 100 hour	Certified Max Gross Wt.:	1370 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	1125 Hrs at time of accident	Engine Manufacturer:	LYCOMING
ELT:	Not installed	Engine Model/Series:	0-320 SERIES
Registered Owner:	On file	Rated Power:	180 Horsepower
Operator:	On file	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:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	2 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:		Temperature/Dew Point:	-4°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	St. Michael, MN (PVT)	Type of Flight Plan Filed:	None
Destination:	Corcoran, MN	Type of Clearance:	None
Departure Time:	10:25 Local	Type of Airspace:	

Wreckage and Impact Information

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

Administrative Information

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

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