Aviation Investigation Final Report

Location:	Grand Forks, North Dakota	**Accident Number:**	CHI06CA168
Date & Time:	June 16, 2006, 19:30 Local	**Registration:**	N1675U
Aircraft:	Schweizer 269C	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The helicopter was substantially damaged when the tail rotor struck the taxiway during recovery from an intentional autorotation. The flight instructor and commercial pilot (dual student) were not injured. The flight instructor stated that the instructional flight included 180-degree autorotations, which were terminated into a hover with the addition of engine power. He reported that on the first autorotation the dual student flared high and during the recovery the rotor speed decayed requiring a landing on the taxiway. He noted that the dual student was subsequently instructed to increase engine power as collective was increased during the recovery in order to maintain rotor speed. On the second autorotation, he stated that the dual student flared lower and a "little more aggressively." He noted that as the dual student increased the collective, the rotor speed again decayed. The flight instructor stated that "as the collective continued upward the engine and rotor [speed] decreased." He "intervened on the controls and continued to increase the collective and throttle and level the aircraft, [when] the tail struck the taxiway." The flight instructor subsequently landed the helicopter after noting an airframe vibration. The flight instructor reported no malfunctions or failures prior to the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The dual student's failure to maintain rotor speed during the recovery from the intentional autorotation and the flight instructor's delayed remedial action. Contributing factors were the flight crew's intentional autorotation and dual student's misjudged flare.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings
1. (F) AUTOROTATION - INTENTIONAL - FLIGHTCREW
2. (F) FLARE - MISJUDGED - DUAL STUDENT
3. (C) ROTOR RPM - NOT MAINTAINED - DUAL STUDENT
4. (C) REMEDIAL ACTION - DELAYED - PILOT IN COMMAND(CFI)
5. TERRAIN CONDITION - GROUND

Factual Information

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Flight instructor Information

Certificate:	Airline transport; Flight instructor	**Age:**	40,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land; Multi-engine sea	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Glider; Gyroplane; Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane; Helicopter	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Glider; Gyroplane; Helicopter; Instrument airplane; Instrument helicopter	**Toxicology Performed:**	No
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	August 1, 2005
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	September 1, 2005
Flight Time:	6831 hours (Total, all aircraft), 270 hours (Total, this make and model), 4665 hours (Pilot In Command, all aircraft), 135 hours (Last 90 days, all aircraft), 54 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Co-pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	33,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane single-engine	**Toxicology Performed:**	No
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	July 1, 2003
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	March 1, 2006
Flight Time:	280 hours (Total, all aircraft), 47 hours (Total, this make and model), 44 hours (Pilot In Command, all aircraft), 50 hours (Last 90 days, all aircraft), 18 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Schweizer	**Registration:**	N1675U
Model/Series:	269C	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	S1878
Landing Gear Type:	Skid	**Seats:**	2
Date/Type of Last Inspection:	May 1, 2006 Annual	**Certified Max Gross Wt.:**	2050 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	480 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Not installed	**Engine Model/Series:**	H10-360-O1A
Registered Owner:	On file	**Rated Power:**	190 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:	GFK,845 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	19:53 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Few / 25000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/ 0 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	290°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.9 inches Hg	**Temperature/Dew Point:**	21°C / 7°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Grand Forks, ND (GFK)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	18:00 Local	**Type of Airspace:**	

Airport Information

Airport:	Grand Forks Intl GFK	**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Simulated forced landing

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	47.95,-97.183334

Administrative Information

Investigator In Charge (IIC):	Sorensen, Timothy
Additional Participating Persons:	John Volt; FAA-Fargo FSDO; Fargo, ND
Original Publish Date:	October 3, 2006
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=64091