Aviation Investigation Final Report

Location:	Byron, New York	**Accident Number:**	NYC04LA051
Date & Time:	December 27, 2003, 14:30 Local	**Registration:**	N358SS
Aircraft:	Schweizer 269C-1	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot was practicing autorotations into an off airport open field. The landing was hard, and the pilot received serious injuries. The pilot reported the he felt a shudder during the autorotation, and tried to regain airspeed by using forward cyclic, but he was unable to regain airspeed. Examination of the helicopter found evidence of low main rotor rpm. No discrepancies were found with the flight controls and engine.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's improper use of the collective, and failure to maintain main rotor rpm, which resulted in low main rotor rpm and a hard landing.

Findings

Occurrence #1: HARD LANDING
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings
1. AUTOROTATION - SIMULATED - PILOT IN COMMAND
2. (C) COLLECTIVE - IMPROPER USE OF - PILOT IN COMMAND
3. (C) ROTOR RPM - NOT MAINTAINED - PILOT IN COMMAND
4. TERRAIN CONDITION - OPEN FIELD

Factual Information

On December 27, 2003, about 1430 eastern standard time, a Schweizer 269C-1 helicopter, N358SS, was substantially damaged during a practice autorotation in Byron, New York. The certificated private pilot received serious injuries. Visual meteorological conditions prevailed for the local flight that departed from Genesee County Airport (GVQ), Batavia, New York. No flight plan had been filed for the local flight that was conducted under 14 CFR Part 91.

The pilot reported that he flew to Le Roy Airport (5G0), and performed practice approaches. He then departed Le Roy Airport to the northwest, and looked for a field to practice autorotations. He further stated:

"...I started the autorotation at 1,300 feet msl [600 feet agl]. At approx, 300 feet into the auto, I felt a shudder. I tried using forward cyclic to regain airspeed, but to no avail. I crashed into a farm field that was plowed and completely devoid of all vegetation."

According to an inspector from the Federal Aviation Administration (FAA), the landing skids had collapsed. The tail boom was separated from the aft fuselage, and an indentation was found on the tail boom, consistent with main rotor blade strike. The pilot's seat was crushed down.

The helicopter was re-examined under the supervision of an FAA airworthiness inspector, with representatives from Schweizer Aircraft Co, and Textron Lycoming. According to the report from a representative of Schweizer Aircraft Co.:

"...All three rotor blades were still attached to the rotor hub. One blade (yellow) was bent and deformed significantly, the other two were straight and intact, exhibiting only minor compression buckles at the root end trailing edge...General condition of the rotor system indicates minimal rotor RPM at impact...All [flight] controls showed continuity although the cabin damage restricted the travel of the cyclic...Measurement of the MR [main rotor] Pitch Links indicate they are slightly shorter than nominal length and that the collective rod was long. These measurements are very close to the average aircraft after production flight test and aircraft certification...The engine rotated with signs of compression on all cylinders. The valve train upper end was intact and appeared to operate satisfactorily. The magnetos were removed and spun up with spark seen at all lead ends. The oil screen and filter were checked and found clear of debris. The FAA investigator on site reported a strong fuel smell at the scene and there was residual fuel in the carburetor when it was disconnected...."

Pilot Information

Certificate:	Private	**Age:**	52,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 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	June 30, 2002
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	June 9, 2002
Flight Time:	275 hours (Total, all aircraft), 105 hours (Total, this make and model), 9 hours (Last 90 days, all aircraft), 3 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Schweizer	**Registration:**	N358SS
Model/Series:	269C-1	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	121
Landing Gear Type:	Skid	**Seats:**	2
Date/Type of Last Inspection:	May 2, 2003 Annual	**Certified Max Gross Wt.:**	1750 lbs
Time Since Last Inspection:	96.2 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	907.6 Hrs at time of accident	**Engine Manufacturer:**	Textron Lycoming
ELT:	Not installed	**Engine Model/Series:**	HO-360-C1A
Registered Owner:	Doyle Helicopter LLC	**Rated Power:**	180 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:	Doyle Helicopters, LLC.	**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	ROC,560 ft msl	**Distance from Accident Site:**	19 Nautical Miles
Observation Time:	14:54 Local	**Direction from Accident Site:**	91°
Lowest Cloud Condition:	Few / 25000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	270°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.32 inches Hg	**Temperature/Dew Point:**	6°C / -1°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Batavia, NY (GVQ)	**Type of Flight Plan Filed:**	None
Destination:	(GVQ)	**Type of Clearance:**	None
Departure Time:	13:15 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious	**Latitude, Longitude:**	43.067501,-78.090278

Administrative Information

Investigator In Charge (IIC):	Hancock, Robert
Additional Participating Persons:	Guido Hassig; Federal Aviation Administration; Rochester, NY Aaron Spotts; Textron Lycoming; Williamsport, PA Steve Gleason; Schweizer Aircraft Corp.; Elmira, NY
Original Publish Date:	September 1, 2004
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=58534