Aviation Investigation Final Report

Location:	Waterloo, Indiana	**Accident Number:**	CHI01FA257
Date & Time:	August 4, 2001, 20:50 Local	**Registration:**	N6129M
Aircraft:	Schweizer 269C	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The helicopter impacted terrain while on a night approach to the pilot's private landing pad. The pilot was issued a special issuance medical certificate that expired approximately five months prior to the accident. Examination of the wreckage revealed the absence of torsional signatures. Only partial flight control continuity could be established due to the extent of impact and fire damage.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Aircraft control not maintained for undetermined reasons.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: UNKNOWN

Findings
1. (C) AIRCRAFT CONTROL - NOT MAINTAINED
2. LACK OF CERTIFICATION - PILOT IN COMMAND
3. (C) REASON FOR OCCURRENCE UNDETERMINED

Factual Information

HISTORY OF FLIGHT

On August 4, 2001, at 2050 eastern standard time, a Schweizer 269C, N6129M, owned and piloted by a private pilot, was destroyed on impact with terrain and fire approximately two statue miles (sm) east of Waterloo, Indiana. Night visual meteorological conditions prevailed at the time of the accident. The 14 CFR Part 91 personal flight was not operating on a flight plan. The pilot and passenger were fatally injured. The round trip flight from Waterloo, Indiana, to Noblesville, Indiana, originated at 1500-1530.

The pilot departed the helicopter pad located at his residence, at 1500-1530, en route to Noblesville, Indiana, to pick up his wife. They then departed from Noblesville, Indiana, at an unknown time, en route to the Marion Municipal Airport (MZZ), Marion, Indiana. Upon their arrival at MZZ, the pilot called a service person at 1850-1855 to come out to the airport in order to fuel the helicopter. The service person left his house and arrived at the airport where he met the pilot and "topped off" the helicopter with 100 low lead aviation fuel. The pilot did not mention any mechanical problems relating to the helicopter during the time the service person spent with the pilot. The service person stated that he stayed at the airport until the flight departed at 1935. He descirbed the takeoff as normal.

A witness reported that he was sitting outside a hanger at the Walker Airport, Waterloo, Indiana. He stated that it was "a very nice night". He saw the helicopter fly over the airport from the south on a magnetic course of 020-025 degrees. He estimated the altitude to be twice the height of the trees near the accident site to less than 200 feet agl when he crossed over the airport, then coming from the south, the pilot would fly over the airport to get to his property. He added that this was a typical altitude at which the pilot would fly at. He described the helicopter’s airspeed as a "very slow airspeed maybe 20-25 mph." He was low, but the pilot would always fly low. He flew over "with no apparent problem in a straight line." The engine "sounded fine." He saw the helicopter go over the woods and did not hear anything that would have alerted him to any problem with the aircraft. The wreckage site was not in the path that [the pilot] would have taken while en route to his landing pad when coming from a southerly direction. The wreckage site was 400 yards east of a direct line and more over the woods from this path. The witness added that he did not know the pilot's normal pattern of approaching the helicopter's landing pad. The pilot bought the helicopter to check out his farm. When he would fly over the airport, it would be at a slow airspeed and he would then pick up speed quickly to 40-60 mph once he cleared the airport.

PERSONNEL INFORMATION

The pilot, age 72, held a commercial pilot certificate with airplane single-engine land, multi-

engine land and N-B25 ratings. He also held a private pilot certificate with a rotorcraft-helicopter rating. The pilot reported a flight time of 2,300 hours on the application for his third class medical certificate. The certificate was issued on March 3, 2000, with the following restrictions: "must wear corrective lenses for near and distant vision, must use hearing amplification, miscellaneous restriction assigned".

The pilot failed his first private pilot helicopter oral and practical test on March 27, 2001, at which time he had reported accumulating 13.7 hours of pilot-in-command/solo flight time with 58 hours of dual instruction for a total of 71.7 hours in Robinson R-22HP helicopters. He was reexamined in Area of Operation I, tasks E and G. Operation I is preflight preparation, task E is performance and limitations, and G refers to minimum equipment list. He received a private pilot helicopter rating on March 30, 2001, following the completion of a second practical test.

According to a Federal Aviation Administration (FAA) Blue Ribbon Report of the pilot's medical record, the pilot received a special issuance third class medical certificate on August 7, 2000, with an expiration date of March 31, 2001, due to "a history of diabetes mellitus requiring oral hypoglycemic medication". There were no further issuances of a medical certificate to the pilot after August 7, 2000.

AIRCRAFT INFORMATION

The helicopter, serial number S1509, was manufactured in 1990 and was registered to the pilot. The two-seat helicopter has a three-bladed, fully articulated single main rotor system powered by a Lycoming HIO-360-C1A engine rated at 190 hp at 3,200 rpm. Power is transmitted from the engine through a V-belt belt drive system and a tail rotor drive shaft connecting two variable pitch blades. The helicopter had an average cruise speed of 60 kt.

METEOROLOGICAL INFORMATION

The Fort Wayne, Indiana, automated surface observing system, located 27 nautical miles bearing 203 degrees from the accident site, recorded, at 2054, no wind, 10 sm visibility, clear sky conditions, temperature of 22 degrees Celsius, dew point of 18 degrees Celsius, and an altimeter of 30.06 inches of mercury.

WRECKAGE AND IMPACT INFORMATION

The accident site was 4,607 feet southeast of a landing pad located at the pilot's residence. The helicopter was lying along an embankment to a creek and a tree line consisting of trees estimated to be 50 feet in height. The surrounding trees exhibited evidence of 30-45 degree angular slashes and sooting. The helicopter was oriented on a heading of 288 degrees with the right side nose section and right forward skid partially buried in the ground. There was no evidence of ground scarring beyond the airframe's footprint.

The airframe and cockpit area were consumed by fire forward of the tail boom attach points.

The tail assembly, main rotor and engine assemblies were co-located with the main wreckage.

All three of the main rotor blades were attached to the main rotor hub, one of which was S-shaped, from its tip to about 1/3 span inward towards the root, and wrapped between the bases of two trees. All three blades displayed bends about the approximate lateral axes of the blades. Inspection of the swash plate assembly revealed that all of the pitch links were attached to their respective pitch horns. All of the stationary swash plate control rods were attached to the swash plate but were fractured approximately one foot below the swash plate. The fracture surfaces of the control rods were consistent with an overstress separation.

The tail boom assembly was lying on its right side along with the rest of the helicopter with both tail rotor blades being parallel to the ground. The tailboom's right side was facing the ground with its right strut tube assembly exhibiting compressive deformation. The left strut tube assembly was not deformed. The horizontal and vertical stabilizers were attached to the tailboom. The right tail rotor attach point was fractured at the fitting, but still bolted in place. Neither blade possessed any leading edge damage and their respective linkages were intact. The tail rotor was rotated by hand and rotation of the tail rotor drive shaft was then noted. The tail rotor drive shaft was fractured at a point located at the forward end of the tailboom. There was circumferential scoring near the fracture surface which exhibited radial deformation and a fracture surface consistent with an overstress separation. There was no evidence of buckling of the hollow tail rotor drive shaft. Flight control continuity was confirmed from the tail rotor through the aft bellcrank and pulley installation and into the cockpit area.

Seven V-belts were melted and partially disintegrated; the remains, of which, were lying within the groves of the lower pulley. The lower pulley receives power from the engine crankshaft and directs it to the upper pulley through a matched set of V-belts. There was no residual V-belt material within the grooves of the upper pulley. The leading edge of the engine impeller exhibited wear from about the midspan of its blades to their tips without any twisting or deformation. The impeller’s fiberglass housing was crushed, fire damaged and backed off approximately two inches from the impeller. The main rotor gear drive assembly's internal components were scattered amongst the main wreckage.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was conducted by the Dekalb County Coroner at the Saint Joseph Hospital, Fort Wayne, Indiana.

Federal Aviation Administration (FAA) forensic toxicology test results were negative for all substances tested.

TESTS AND RESEARCH

The pilot's flight instructor stated that the pilot had a conservative flying style. The only time that he had flown with him was when the helicopter was ferried from Alaska. He reported that

the typical approach to the pilot's landing pad was from the south because of the grain elevators and structures located to the north of the property. The pilot did not fly that large of a radius on his approaches to the landing pad.

ADDITIONAL INFORMATION

The FAA and Textron Lycoming were parties to the investigation.

The wreckage was released to a family relative of the pilot on August 8, 2001.

Pilot Information

Certificate:	Commercial; Private	**Age:**	72,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 Expired	**Last FAA Medical Exam:**	March 7, 2000
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	March 30, 2001
Flight Time:	2300 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Schweizer	**Registration:**	N6129M
Model/Series:	269C	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	S1509
Landing Gear Type:	Skid	**Seats:**	2
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	2050 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Lycoming
ELT:		**Engine Model/Series:**	HIO-360-D1A
Registered Owner:	Marvin R. Walker	**Rated Power:**	190 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night/bright
Observation Facility, Elevation:	FWA,803 ft msl	**Distance from Accident Site:**	27 Nautical Miles
Observation Time:	20:54 Local	**Direction from Accident Site:**	203°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	0 knots / 0 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.05 inches Hg	**Temperature/Dew Point:**	22°C / 18°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Unknown (PVT)	**Type of Flight Plan Filed:**	Unknown
Destination:		**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	Class G

Airport Information

Airport:	Private	**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	Unknown
Runway Used:		**IFR Approach:**	Unknown
Runway Length/Width:		**VFR Approach/Landing:**	Unknown

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	41.429088,-85.021761(est)

Administrative Information

Investigator In Charge (IIC):	Gallo, Mitchell
Additional Participating Persons:	Harold Jones; Federal Aviation Administration; Southbend, IN Greg Erikson; Textron Lycoming; Wayne, IL
Original Publish Date:	June 25, 2003
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=52951