Aviation Investigation Final Report

Location:	Jeanerette, Louisiana	**Accident Number:**	CEN16FA304
Date & Time:	August 3, 2016, 10:47 Local	**Registration:**	N1549W
Aircraft:	Schweizer 269C 1	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Aerial observation		

Analysis

The commercial pilot was completing a scheduled biweekly patrol of a series of intersecting pipelines. When the helicopter failed to arrive as scheduled, a search was initiated. The helicopter was located partially submerged in a remote, thickly wooded cypress swamp. The damage to the helicopter and to surrounding trees indicated that the helicopter was in a near-vertical descent with a nose-down attitude at impact.

Examination of the helicopter and engine revealed no evidence of preimpact discrepancies or anomalies, and damage to the main rotor blades was consistent with the engine producing power at impact. Review of weather information revealed that there was a large thunderstorm complex in the area, but it did not extend over the accident site. The closest weather station, located about 18 miles from the accident site, was reporting visual flight rules to marginal flight rules conditions due to light rain and a broken-to-overcast cloud layer. Due to an overcast layer of high cirriform clouds over the accident site, it was not possible to determine if any low clouds were in the immediate vicinity of the accident site. The circumstances of the accident are consistent with a loss of control by the pilot. The reason for the pilot's loss of helicopter control could not be determined.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:
The pilot's loss of helicopter control for reasons that could not be determined based on available evidence.

Findings

Environmental issues	Thunderstorm - Not specified
Aircraft	(general) - Not attained/maintained
Personnel issues	Aircraft control - Pilot

Factual Information

History of Flight

Maneuvering-low-alt flying	Loss of control in flight (Defining event)
Maneuvering-low-alt flying	Collision with terr/obj (non-CFIT)
Enroute-cruise	Other weather encounter

On August 3, 2016, about 1047 central daylight time, a Schweizer 269C-1 helicopter, N1549W, was destroyed when it impacted trees in swampy terrain near Jeanerette, Louisiana. The commercial pilot was fatally injured. The flight was being operated by Gulf Coast Helicopters, Inc., as a 14 *Code of Federal Regulations* Part 91 pipeline patrol flight, and no flight plan had been filed. Day visual meteorological conditions prevailed for the low-altitude cross-country flight. The flight originated from the Louisiana Regional Airport (L38), Gonzales, Louisiana, about 0730 and was destined for the Harry P. Williams Memorial Airport (PTN), Patterson, Louisiana.

The helicopter was completing a scheduled biweekly patrol of a series of intersecting pipelines. When the helicopter failed to arrive at PTN, the operator notified the Federal Aviation Administration (FAA). An alert notice was issued, and a search was initiated. The helicopter wreckage was found the next day partially submerged in the Atchafalaya Basin, a remote, thickly wooded cypress swamp, about 15 miles east of Jeanerette, Louisiana.

Pilot Information

Certificate:	Commercial	**Age:**	29,Male
Airplane Rating(s):	None	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	4-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	April 24, 2015
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	March 29, 2015
Flight Time:	(Estimated) 1611 hours (Total, all aircraft), 800 hours (Total, this make and model), 225 hours (Last 90 days, all aircraft), 72 hours (Last 30 days, all aircraft), 8 hours (Last 24 hours, all aircraft)		

The pilot held a commercial pilot certificate with a rotorcraft-helicopter rating. He was not instrument rated although he had logged 5 hours in simulated instrument meteorological conditions. His second-class airman medical certificate, dated April 24, 2015, contained the restriction: "Must wear corrective lenses."

The pilot's logbook was recovered from the submerged wreckage. It contained entries from August 8,

2012, through August 2, 2016. The pilot had successfully completed the practical test for a commercial pilot certificate on March 29, 2015, and according to the FAA, this met the biennial flight review requirements of 61.56 (d). At that time, the pilot had accumulated about 427 hours of flight experience.

According to Gulf Coast Helicopters, the pilot was hired on June 8, 2015. At that time, he had logged a total of about 488 hours of flight experience. The operator reported that most of the pilot's activity in the past year was pipeline patrol with most of that flying about 500 ft above ground level.

Based on a review of the pilot's logbook, his most recent FAA airman medical certification application, information provided by the operator, the helicopter's daily logs, and other records, the pilot's flight experience on August 2, 2016, was estimated to be 1,611 total flight hours, all of which were in helicopters and more than 800 hours of which were in the Schweizer 269. The pilot had logged 1,069 hours in the last 12 months, 225 hours in the last 3 months, 72 hours in the last 30 days, and 8 hours in the last 24 hours.

Aircraft and Owner/Operator Information

Aircraft Make:	Schweizer	**Registration:**	N1549W
Model/Series:	269C 1	**Aircraft Category:**	Helicopter
Year of Manufacture:	2005	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	0219
Landing Gear Type:	Unknown	**Seats:**	3
Date/Type of Last Inspection:	100 hour	**Certified Max Gross Wt.:**	1750 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Lycoming
ELT:	Not installed	**Engine Model/Series:**	HIO-360-G1A
Registered Owner:	GULF COAST HELICOPTERS INC	**Rated Power:**	180 Horsepower
Operator:	GULF COAST HELICOPTERS INC	**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:	GULF COAST HELICOPTERS INC	**Operator Designator Code:**	GWLA

The helicopter, serial number 0219, was manufactured by the Schweizer Helicopter Corporation in 2005. It was powered by a Lycoming HIO-360-G1A engine (serial number RL-29952-51E), rated at 180 horsepower. Power from the engine was transmitted through eight drive belts and two drive shafts to the three-bladed main rotor and the two-bladed tail rotor. The helicopter had a gross weight of 1,750 pounds.

According to the maintenance records, the helicopter's last annual inspection was on September 20, 2015, and the last 100-hour inspection was on July 28, 2016, when the helicopter had accrued 5,595.4 flight hours. The engine was remanufactured by Lycoming on March 6, 2013, and it had accrued 4,199.2

flight hours at that time.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KPTN,9 ft msl	**Distance from Accident Site:**	17 Nautical Miles
Observation Time:	10:21 Local	**Direction from Accident Site:**	167°
Lowest Cloud Condition:	Few / 5000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	60°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.09 inches Hg	**Temperature/Dew Point:**	24°C / 22°C
Precipitation and Obscuration:	In the vicinity - Thunderstorm -		
Departure Point:	GONZALES, LA (L38)	**Type of Flight Plan Filed:**	None
Destination:	PATTERSON, LA (PTN)	**Type of Clearance:**	None
Departure Time:	07:30 Local	**Type of Airspace:**	Class G

The National Weather Service forecast chart indicated that scattered rain showers and thunderstorms were expected over southeastern Louisiana with summer air mass type convection. The surface analysis chart with a satellite composite image overlaid for 1000 depicted a large circular area of enhanced clouds associated with convective clouds or thunderstorms over southeastern Louisiana; the accident site was located adjacent to the eastern edge of this area. The area indicated an anticyclonic or clockwise wind flow. Cloud cover ranged from clear skies over the northern and western portions of Louisiana to overcast skies over the New Orleans area with thunderstorms and rain being depicted in that area. The national composite radar mosaic for 1045 depicted a large area of intense-to-extreme intensity echoes over southeast Louisiana with the strong portion of the echoes between Baton Rouge and New Orleans. Only very light intensity echoes were depicted bordering the accident site eastward.

The closest weather reporting facility was the destination, PTN, located about 18 miles south of the accident site. At 1056, PTN reported visibility 5 miles in moderate rain and mist, a few clouds at 8,000 ft, ceiling overcast at 10,000 ft, and lightning distant northeast, east, and southeast. A thunderstorm began at 0957 and ended at 1019. Another thunderstorm began at 1021 and ended at 1049. Rain began at 1002, ended at 1012, and began again at 1029. Visual flight rules (VFR) to marginal VFR (MVFR) conditions prevailed at the station due to the light rain and broken to overcast cloud layer. The next closest weather reporting facility was Acadiana Regional Airport (ARA), New Iberia, Louisiana, located about 25 miles west of the accident site. At 1053, ARA reported VFR conditions with clear to partly cloudy skies with no thunderstorms reported. The next closest weather reporting location was the departure airport, L38, located about 26 miles north-northeast of the accident site. At 1035, L38 reported thunderstorms with light rain and lightning distant in all quadrants.

At 1045, the Geostationary Operational Environmental Satellite number 13 depicted a large cluster of cumulonimbus clouds over southeast Louisiana with cloud tops near 45,000 ft. The enhanced cloud centers were located northeast through east and southwest of the accident site. The accident site was

under the anvil outflow or cirrostratus clouds from the cumulonimbus cloud system. Strong active convection was noted in the system to the east of Baton Rouge and off the Louisiana coast with overshooting cloud tops. The overcast cloud cover over the accident site was associated with high cirriform clouds. Due to the extensive cloud cover, it was not possible to determine if any low clouds were in the immediate vicinity of the accident site.

The accident site was on the border between the forecasts for southwestern and southeastern Louisiana. The forecast for the southwestern portion of the state expected scattered clouds at 3,000 ft, light winds, and no convective activity. The forecast for the southeastern portion expected scattered to broken clouds at 4,000 ft with tops to 14,000 ft with isolated thunderstorms and light rain. The cumulonimbus clouds tops were expected to reach 45,000 ft. The quantitative precipitation forecast indicated a chance of precipitation between 0.01 to 0.10 inches over the accident site.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	29.997777,-91.405555(est)

The helicopter was partially submerged in the swamp in a nose-down attitude. There was a hole in the overhead trees, consistent with a steep descent. There were also blade strike marks on the tree trunks. The wreckage was recovered and transported to Air Salvage of Dallas, Lancaster, Texas, where it was further examined on August 31, 2016.

The tailboom was intact but separated from the steel tube frame. The main rotor blades were bent and separated. There was impact damage to the aft cabin wall, bulkhead, and forward side of fuel tanks. The seat deck assembly was compressed and folded back toward the aft cabin wall. The aft cabin wall was deformed and pushed aft. The forward sides of both fuel tanks were compressed and deformed, and the aft portions were intact and remained relatively in their original shapes. The mast was intact. The forward bulkhead mount tabs were fractured. The canted horizontal stabilizer was not present. The forward attach fitting remained attached to the tailboom. The lower vertical stabilizer was crushed and deflected to the right with a large rounded dent, which deformed the boom and was oriented about 90° to the longitudinal centerline of the tailboom.

The landing gear was damaged. Neither of the forward skids were present for examination. The left side forward strut was not recovered. All remaining struts and damper attach points exhibited damage consistent with the landing gear assembly being pushed aft. The aft crossbeam was intact and relatively straight. The forward crossbeam was bowed aft in the center section but remained straight in the outer ends. The right hand drag strut was straight and fractured at the aft rod end bearing threads. The left drag strut was bent in the middle nearly 90° with the forward end remaining attached to the crossbeam and aft end to the aft strut.

The yellow and red main rotor blades were bent in a spanwise downward direction. The blue blade separated near the root and exhibited minor downward bending, trailing edge wrinkles, and peeled upper skin near the tip. The red blade was bent up at the root with tearing and separation, and bent down about 90° midspan and down again about 90° near the tip. The yellow blade was bent down about 90° midspan and down about 30° near the tip. Both tail rotor blades were intact, straight, exhibited only minor damage, and remained attached to the hub. The main rotor head was intact and attached to the drive shaft. The swashplate was intact. The rotating scissors links were intact. The rotor head turned freely in the mast bearing. All three pitch housings remained attached to the main rotor hub. The pitch shaft droop stop lugs were intact and appeared straight. All three pitch housings rotated smoothly, flapped smoothly, and exhibited signs of contact with the upper hub, indicative of full-up flapping motion. All three main rotor dampers were attached at the pitch housings and the blade roots. The pitch change links were intact. The droop stop assembly was intact.

The tail rotor fork and teetering bolt were intact. The assembly teetered properly. The pitch control unit was intact, rotated freely, and slid in and out on the pinion. It was attached to the pitch links, which were straight. The control bell crank was engaged in the pitch control housing and attached to the tail gearbox and the control rod. The tail rotor gearbox remained attached to the tailboom adapter, rotated, and exhibited continuity. The tail rotor drive shaft was bent at the forward bulkhead, and the drive adapter splines were intact. The main gearbox housing was intact, rotated freely, and exhibited continuity. The belt drive assembly was intact and did not exhibit damage. The upper pulley rotated and engaged the overrunning clutch properly. All pulleys were intact, all bearings turned, and the belts were intact. The engine drive shaft was undamaged. There was no evidence of preimpact discrepancies or anomalies with the airframe.

The engine was generally intact. The fuel servo, engine-driven fuel pump, and the right magneto were still attached. Both magnetos were installed on a magneto test bench and rotated up to 2,000 rpm but no sparks were observed. The technician stated that the magnetos were probably not functioning due to internal corrosion caused by water submersion. The spark plugs were removed, and the engine rotated, producing thumb compression on all cylinders. Valve motion was noted on all cylinders. Fuel was found in the servo fuel screen, and no water was present. The electric boost pump was seized; the engine-driven fuel pump operated and pumped liquid; the gascolator was intact with some gas and water present; and the screen was not blocked. The fuel injector and the inlet fuel screen were clear. Fuel injector nozzles 1 and 3 were plugged with a foreign substance. Cylinder nozzle 2 was impact damaged. The remainder of the nozzles were clear and unobstructed. All fuel lines were secure, and the fittings were tight. Fuel and water was observed throughout the engine fuel system. Oil was observed in and around the engine during the engine examination. The oil system was complete and intact with no preimpact defects noted. The oil suction screen was contaminated with carbon deposits and plant material. Nothing was observed during the examination that would have precluded the engine from operating normally before impact.

Medical and Pathological Information

According to the Louisiana Forensic Center's autopsy report, the pilot's cause of death was "blunt force

injuries."

According to the toxicology screen performed by the FAA's Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma, no carbon monoxide or drugs were detected in the pilot's blood. A cyanide test was not performed. The pilot tested positive for ethanol: 71 mg/dL in brain tissue, 60 mg/dL in muscle tissue, and 54 mg/dL in blood. N-butanol was detected in blood, and N-propanol was detected in muscle, brain tissue, and blood. According to the laboratory, the ethanol, N-butanol, and N-propanol were most likely the byproducts of postmortem putrefaction.

Administrative Information

Investigator In Charge (IIC):	Latson, Thomas
Additional Participating Persons:	Kenneth E Savage; FAA Baton Rouge FSDO; Baton Rouge, LA Michael Wilson; FAA Baton Rouge FSDO; Baton Rouge, LA Jill G Browning; Sikorsky; Stratford, CT Steve Gleason; Sikorsky; Stratford, CT Anne Cottle; Sikorsky; Stratford, CT John Butler; Lycoming Engines; Williamsport, PA
Original Publish Date:	September 6, 2017
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=93762