Aviation Investigation Final Report

Location:	Little Falls, Minnesota	**Accident Number:**	CEN14LA418
Date & Time:	May 28, 2014, 10:15 Local	**Registration:**	N51853
Aircraft:	TEXAS HELICOPTER CORP OH 13H/M74A	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 137: Agricultural		

Analysis

The commercial pilot was conducting an aerial application flight. A witness reported observing the helicopter crossing over a highway that bordered a large field that the helicopter was spraying. The witness added that the helicopter was about three-quarters of the way down the field when it appeared to "hop." As the helicopter ascended, it appeared to veer right, and it then continued to ascend to about twice the height of nearby trees while rapidly spinning in circles. The witness lost sight of the helicopter when his vehicle passed trees alongside the road. After passing the trees, the witness looked back and saw smoke coming from a farm building.

During an examination of the accident scene, a portion of one of the tail rotor blades was found at the base of a tree located on the west edge of the field. Cut and broken branches were found distributed westward from the tree along the ground. The helicopter was found embedded in the roof of a metal building about 70 yards west of the tree. An examination of the helicopter systems revealed no preimpact anomalies. It is likely that, on completion of his aerial application pass, the pilot did not pull the helicopter up in time to avoid the tree located at the edge of the field that he was spraying.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's failure to maintain clearance from a tree at the edge of a field that he was spraying.

Findings

Personnel issues	Monitoring environment - Pilot
Aircraft	Altitude - Not attained/maintained
Environmental issues	Tree(s) - Awareness of condition
Aircraft	Tail rotor blade - Damaged/degraded

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)

On May 28, 2014 about 1015 central daylight time, a Texas Helicopter Corp OH-13H/M74A agricultural helicopter, N51853, registered to the pilot, sustained substantial damage following a collision with trees and a building near Little Falls, Minnesota. The commercial pilot sustained serious injuries in the accident, was hospitalized, and later succumbed to those injuries. The aerial application flight was conducted under the provisions of 14 Code of Federal Regulations Part 137. No flight plan was filed and visual meteorological conditions prevailed at the time of the accident. The flight originated at 0945 from a nearby private agricultural staging area.

A witness traveling in his vehicle on a nearby highway saw the helicopter cross the highway and proceed in the direction of farm building that bordered a large field that the helicopter was spraying at the time. The witness said the helicopter was about 3/4 of the way down the field when it appeared to "hop," like it encountered an area of rising air. As the helicopter ascended it appeared to veer to the right. When the witness looked over at the helicopter again, it had pulled up to about twice the height of the trees, near the trees, and was rapidly spinning in circles. The witness lost sight of the helicopter when his vehicle passed trees alongside the road. After passing the trees, the witness looked back and saw smoke coming from one of the farm buildings.

The chemical truck operator who worked for the pilot stated they were staging about 1/2 mile from the field the pilot was spraying. He said there was nothing wrong with the pilot or helicopter on that day, nor did the pilot mention having any issues with the helicopter. He said that the pilot should have been mostly done treating the field at the time of the accident. He also said that the pilot was spraying the field in a direction that would have taken him over the field toward the farm buildings.

At 0944, the helicopter pilot contacted the Miller Army Air Field advisory frequency and informed them that he was going to be spraying a field northeast of the airfield and that he would be operating below100 ft for about an hour, and would call them after he was done. The advisory controller told the pilot that the nearby restricted area was active, the wind was 040 degrees at 5 knots, and the altimeter was 30.11 inches. The advisory controller said that was the only communications that she had with the helicopter.

Local law enforcement arrived on the scene to find the helicopter impacted into the roof of an all-metal pole shed. The pilot was found strapped in the helicopter pilot seat, unconscious, breathing, and with a pulse. The pilot was transported by helicopter to St. Cloud, Minnesota. The pilot subsequently died on June 5, 2014.

Pilot Information

Certificate:	Commercial	**Age:**	71,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	3-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:**	March 24, 2014
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	April 1, 2013
Flight Time:	(Estimated) 17370 hours (Total, all aircraft), 4500 hours (Total, this make and model), 25 hours (Last 90 days, all aircraft)		

The pilot, age 71, held a commercial pilot certificate with airplane, single-engine land and rotorcraft helicopter ratings. According to the pilot's logbook, the pilot had recorded approximately 17,370 total flying hours and 4,500 hours in the accident helicopter make and model. He had recorded having flown 25 hours in the preceding 90 days. The pilot successfully completed a flight review on April 1, 2013.

The pilot held a valid second-class medical certificate dated March 24, 2014, with a limitation for corrective lenses.

Aircraft and Owner/Operator Information

Aircraft Make:	TEXAS HELICOPTER CORP	**Registration:**	N51853
Model/Series:	OH 13H/M74A G	**Aircraft Category:**	Helicopter
Year of Manufacture:	1978	**Amateur Built:**	
Airworthiness Certificate:	Restricted (Special)	**Serial Number:**	78-021
Landing Gear Type:	N/A; Skid	**Seats:**	2
Date/Type of Last Inspection:	May 2, 2014 Annual	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	7697 Hrs at time of accident	**Engine Manufacturer:**	LYCOMING
ELT:	Not installed	**Engine Model/Series:**	VO-435 SERIES
Registered Owner:	On file	**Rated Power:**	260 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	Agricultural aircraft (137)
Operator Does Business As:	On file	**Operator Designator Code:**	KJPG

The helicopter was a Texas Helicopter Corp OH-13H/M74A. The two-place, single-engine helicopter, serial number 78-021 was manufactured in 1978, and had a restricted special airworthiness certificate for the purpose of agricultural pest control, dated May 17, 2000.

The helicopter was powered by one Lycoming VO-435-A1F fuel-injected 4-cylinder horizontally opposed reciprocating engine, serial number L083-31, rated at 260 horsepower at 3,200 rpm.

According to the helicopter's logbook, the helicopter underwent a 100 hour/annual inspection on May 2, 2014. The helicopter's total time at the annual inspection was 7,686.0 hours, and the hour meter was 2,434.1 hours. The hour meter observed at the accident indicated 2,445.7 hours.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	LXL	**Distance from Accident Site:**	10 Nautical Miles
Observation Time:	09:59 Local	**Direction from Accident Site:**	180°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	100°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.09 inches Hg	**Temperature/Dew Point:**	19°C / 6°C
Precipitation and Obscuration:			
Departure Point:	Little Falls, MN	**Type of Flight Plan Filed:**	None
Destination:	Little Falls, MN	**Type of Clearance:**	None
Departure Time:	09:45 Local	**Type of Airspace:**	

At 0959, the Routine Aviation Weather Observation at Little Falls, Minnesota, 10 miles south of the accident site, was wind 100 degrees at 3 knots, clear skies, 10 statute miles visibility, temperature 66 degrees Fahrenheit (F), dew point 43 degrees F, and altimeter 30.09 inches Hg.

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:**	46.108333,-94.346946(est)

The wreckage debris path began with a large tree located 70 yards east-southeast of the helicopter main wreckage. Part of one of the tail rotor blades and several cut branches were

located at the base of the tree. Cut and broken tree branches were found west of the tree along a line that ran toward the farm buildings. The main wreckage included the cabin, fuselage and tail boom, main rotor system, and the majority of the tail rotor system. The helicopter cabin, fuselage with the engine, transmission, and fuel tank, and the tail boom aft of the fuel tank, were embedded in the roof of a metal pole shed. The remainder of the tail boom and tail rotor rested against the east wall of the building, just beneath the helicopter cabin and fuselage. The main rotor was separated from the transmission and rested in a tree just adjacent to the main wreckage. The tree showed cuts and breakage from the helicopter impact. Flight control continuity was confirmed. The engine, transmission, and other helicopter systems were examined following removal of the helicopter from the building. The examination showed no pre-impact anomalies.

Medical and Pathological Information

The pilot died 8 days after the accident. The results of an autopsy performed on the pilot on June 6, 2014 by the Ramsey County, Minnesota, Medical Examiner, St. Paul, Minnesota, showed the cause of death to be complications of a closed head injury due to a helicopter crash.

The FAA's Civil Aerospace Medical Institute performed forensic toxicology on specimens from the pilot. The following drugs detected in fluids and tissues were the result of treatment administered to the pilot in the attempt to save his life:

Atropine detected in Blood (Heart)
Doxazosin detected in Liver
Doxazosin detected in Blood (Heart)
0.086 (ug/ml, ug/g) Lorazepam detected in Liver
0.027 (ug/ml, ug/g) Lorazepam detected in Blood (Heart)
Morphine detected in Liver
Morphine detected in Blood (Heart)

Administrative Information

Investigator In Charge (IIC):	Lemishko, Alexander
Additional Participating Persons:	David R Nelson; Federal Aviation Administration; Minneapolis, MN
Original Publish Date:	September 14, 2016
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=89849