



Aviation Investigation Final Report

Location:	Griffith, Indiana	Accident Number:	CEN17LA375
Date & Time:	September 11, 2017, 11:00 Local	Registration:	N2686
Aircraft:	Hiller UH 12A	Aircraft Damage:	Substantial
Defining Event:	Flight control sys malf/fail	Injuries:	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The flight instructor was providing dual flight instruction to a student pilot in the helicopter. About 10 minutes into the flight, while in a 3-5 ft hover, the student began to lose helicopter control and the helicopter began to spin to the right. Because the student could not regain control, the instructor took the controls, but the helicopter did not respond to cyclic inputs and left pedal input. At this point, the instructor assumed there was a loss of thrust from the tail rotor. He rolled the throttle off, and the helicopter settled to the ground and landed hard. After the landing, the instructor observed that the tail rotor and tail rotor driveshaft were not spinning and heard a grinding noise near the connection of the transmission output shaft and the tail rotor driveshaft. The instructor found that the tail rotor guard had broken off the helicopter and was about 20 ft away. The instructor could not recall if or when the tail rotor guard struck the ground. Examination of the helicopter revealed that the tail rotor driveshaft had failed near the output shaft of the tail rotor drive assembly. Substantial damage was incurred to the tail rotor and tailboom. Maintenance records were not available. Because neither the student nor the instructor could regain helicopter control, it is likely that the tail rotor driveshaft failed in flight, which led to the loss of tail rotor thrust and subsequent loss of tail rotor control.

Probable Cause and Findings

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

The loss of tail rotor thrust due to a failed tail rotor driveshaft, which resulted in a loss of tail rotor control and a hard landing.

Findings

Aircraft

Tail rotor drive shaft - Failure

Factual Information

History of Flight

Maneuvering	Flight control sys malf/fail (Defining event)
Maneuvering	Loss of control in flight
Maneuvering	Collision with terr/obj (non-CFIT)

On September 11, 2017, about 1100 central daylight time, a Hiller UH-12A helicopter, N2686, registered to a private individual, sustained substantial damage after a loss of directional control and collision with the ground following a loss of the tail rotor drive in the vicinity of Griffith, Indiana. The certified helicopter flight instructor (CFI) and his student were not injured. Visual meteorological conditions prevailed throughout the area and no flight plan was filed. The local instructional flight was being conducted under the provisions of Federal Code of Regulations Part 91. The flight originated at 1050 from the Griffith-Merriillville Airport (O5C), Griffith, Indiana.

The CFI stated that he was providing dual flight instruction to a student pilot. About 10 minutes into the flight, while in a 3-5 foot hover, the student began to lose control and the helicopter began to spin to the right. As the student could not regain control, the CFI took the controls. Upon taking the controls, the helicopter was not responding to cyclic inputs and left pedal input. At this point, the CFI assumed a loss of thrust from the tail rotor. He rolled the throttle off and the helicopter settled to the ground and landed hard.

After asking if his student was ok, the CFI exited the helicopter while the main rotor was still spinning. He observed the tail rotor and tail rotor drive shaft were not spinning and could hear a grinding noise near the connection of the transmission output shaft and the tail rotor drive shaft. After the main rotor stopped spinning, the CFI found the tail rotor guard had broken off the helicopter and was laying about 20-feet away. The CFI did not recall if or when the tail rotor guard struck the ground.

The helicopter was towed to a hangar and was inspected by a local mechanic and FAA inspector. During the inspection, it was discovered that the tail rotor driveshaft had failed near the output shaft of the tail rotor drive assembly. Substantial damage was incurred to the tail rotor and tail boom. Maintenance records were not available.

Pilot Information

Certificate:	Commercial; Flight instructor	Age:	39, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	Helicopter	Restraint Used:	4-point
Instrument Rating(s):	Helicopter	Second Pilot Present:	Yes
Instructor Rating(s):	Helicopter	Toxicology Performed:	No
Medical Certification:	Class 2 Without waivers/limitations	Last FAA Medical Exam:	August 17, 2017
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	February 19, 2017
Flight Time:	(Estimated) 1261 hours (Total, all aircraft), 95 hours (Total, this make and model), 1161 hours (Pilot In Command, all aircraft), 43 hours (Last 90 days, all aircraft), 9 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Student pilot Information

Certificate:	Private	Age:	Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):		Restraint Used:	4-point
Instrument Rating(s):		Second Pilot Present:	Yes
Instructor Rating(s):		Toxicology Performed:	No
Medical Certification:	Unknown	Last FAA Medical Exam:	
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	250 hours (Total, all aircraft), 10 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Hiller	Registration:	N2686
Model/Series:	UH 12A NO SERIES	Aircraft Category:	Helicopter
Year of Manufacture:	1950	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	168
Landing Gear Type:	Skid	Seats:	2
Date/Type of Last Inspection:	September 1, 2017 Annual	Certified Max Gross Wt.:	2500 lbs
Time Since Last Inspection:	49 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	2653.8 Hrs at time of accident	Engine Manufacturer:	Franklin
ELT:	Not installed	Engine Model/Series:	6V350
Registered Owner:	On file	Rated Power:	200 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:	GYG	Distance from Accident Site:	5 Nautical Miles
Observation Time:	12:15 Local	Direction from Accident Site:	250°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	6 knots / 14 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	210°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	-1°C / -7°C
Precipitation and Obscuration:			
Departure Point:	Griffith, IN (05C)	Type of Flight Plan Filed:	None
Destination:	Griffith, IN (05C)	Type of Clearance:	None
Departure Time:		Type of Airspace:	

Airport Information

Airport:	Griffith-Merriville Airport 05C	Runway Surface Type:	
Airport Elevation:	634 ft msl	Runway Surface Condition:	Dry
Runway Used:		IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	1 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	41.519721,-87.399444(est)

Administrative Information

Investigator In Charge (IIC):	Lemishko, Alexander
Additional Participating Persons:	Dwayne Hudson; FAA FSDO; DuPage, IN
Original Publish Date:	July 8, 2019
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=96231

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The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).