



Aviation Investigation Final Report

Location:	Kindred, North Dakota	Accident Number:	CEN18LA334
Date & Time:	August 16, 2018, 10:30 Local	Registration:	N3625Z
Aircraft:	Schweizer 269C	Aircraft Damage:	Destroyed
Defining Event:	Sys/Comp malf/fail (non-power)	Injuries:	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot was conducting a personal flight when he heard a loud "snap" that was followed by a significant yaw of the helicopter during cruise flight. He stated that the throttle still controlled engine speed, but the main rotor speed did not respond to throttle changes. He immediately entered an autorotation and landed the helicopter level on its skids in a nearby wheat field. The helicopter still had forward ground speed at touchdown, it pitched up briefly, and then slowly rolled onto its right side. The pilot moved the mixture control into the fuel cutoff position to shut down the engine after the accident. The helicopter caught fire a few minutes after the accident and was subsequently destroyed.

Postaccident examination revealed that the forward drive splines of the lower coupling drive shaft were missing and exhibited evidence of significant rotational damage. The pilot was unaware of the flight manual's preflight checklist requirement to check the free-play and to verify the proper lubrication of the lower coupling drive shaft, nor had he ever completed those preflight inspection tasks during the 18 years that he had owned the helicopter. Had he completed an adequate preflight inspection of the helicopter, the pilot would have been aware of the lack of lubrication and/or excessive free-play of the lower coupling driveshaft and that maintenance was required before the helicopter could be flown safely.

A review of available maintenance documentation revealed that the helicopter was not in compliance with an airworthiness directive that required the disassembly of the lower coupling drive shaft components for a recurring inspection. The helicopter had exceeded the initial 25-hour time-in-service inspection requirement by about 44 hours when the accident occurred. The pilot, who was the sole owner and operator of the helicopter, was responsible for ensuring compliance with the airworthiness directive. The pilot's non-compliance with the required inspection contributed to the failure of the lower coupling drive shaft.

Probable Cause and Findings

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

The pilot's failure to adequately inspect the lower coupling driveshaft during his preflight inspection and his non-compliance with an applicable airworthiness directive, which resulted in the failure of the forward drive splines of the lower coupling driveshaft during cruise flight. Co-causal to the accident was the pilot's failure to maintain control of the helicopter during the autorotation landing.

Findings

Personnel issues	Preflight inspection - Pilot
Personnel issues	Scheduled/routine maintenance - Pilot
Personnel issues	Use of equip/system - Pilot
Aircraft	Engine/transmission coupling - Not inspected
Aircraft	Engine/transmission coupling - Failure
Aircraft	(general) - Not attained/maintained

Factual Information

History of Flight

Prior to flight	Preflight or dispatch event
Enroute-cruise	Sys/Comp malf/fail (non-power) (Defining event)
Landing	Off-field or emergency landing
Landing-flare/touchdown	Loss of control on ground
Landing-flare/touchdown	Roll over

On August 16, 2018, about 1030 central daylight time, a Schweizer 269C helicopter, N3625Z, was destroyed when it was involved in an accident near Kindred, North Dakota. The pilot was not injured. The helicopter was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot reported that while in cruise flight about 1,000 ft above the ground he heard a loud "snap" that was followed by a significant yaw of the helicopter. He immediately pushed the cyclic control forward and lowered the collective. He observed a "split needle" indication on the instrument panel gauge; the engine speed did not match main rotor speed. The throttle still controlled engine speed, but the main rotor speed did not respond to throttle changes. The pilot stated that the engine continued to run normally, and that yaw control was maintained through the antitorque pedals. He immediately entered an autorotation and made one revolution while he located a suitable landing area.

The pilot landed the helicopter level on its skids in a nearby wheat field, but the helicopter still had forward ground speed and it pitched up briefly. The helicopter subsequently pitched down and slowly rolled onto its right side. The pilot moved the mixture control into the fuel cutoff position to shut down the engine after the accident. The pilot exited the helicopter without injury where he observed smoke emanating from the right side of the helicopter near the damaged right fuel tank. The helicopter caught fire a few minutes after the accident and was subsequently destroyed.

The helicopter wreckage was examined by a Federal Aviation Administration (FAA) airworthiness inspector before it was recovered from the field. The FAA inspector reported that the forward drive splines of the lower coupling drive shaft were missing and exhibited evidence of significant rotational damage.

The FAA Inspector interviewed the pilot to confirm what specific preflight inspection tasks were required with respect to the lower coupling drive shaft. The pilot was unaware of the helicopter's flight manual preflight checklist requirement to check the free-play and verify the presence of adequate lubrication of the lower coupling drive shaft. The flight manual stipulates that maintenance be completed before the next flight if excessive free-play and/or lack of lubrication is observed to the lower coupling drive shaft during a preflight inspection. When the FAA Inspector demonstrated how to check the free-play and verify proper lubrication of the lower coupling drive shaft, the pilot stated that he had never completed those preflight inspection tasks during the 18 years that he had owned the helicopter.

FAA Airworthiness Directive (AD) 93-17-13, dated October 20, 1993, required the disassembly of the lower coupling drive shaft components for inspection every 300 hours time-in-service. A review of the maintenance records and the pilot's flight records revealed that the helicopter had accumulated about 127 hours since AD No. 93-17-13 was last completed on September 5, 2013.

Further review of the maintenance records revealed that the helicopter was not in compliance with AD No. 2017-14-06 that had replaced AD No. 93-17-13 on August 25, 2017. AD No. 2017-14-06 required the disassembly and inspection of the lower coupling drive shaft components within 25 hours time-in-service, and then every 150 hours time-in-service thereafter. The helicopter had never been inspected in accordance with AD No. 2017-14-06, and had exceeded the initial 25 hour time-in-service inspection requirement by about 44 hours when the accident occurred.

Pilot Information

Certificate:	Commercial	Age:	72, Male
Airplane Rating(s):	Single-engine land; Single-engine sea	Seat Occupied:	Left
Other Aircraft Rating(s):	Balloon; Helicopter	Restraint Used:	3-point
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Airplane single-engine	Toxicology Performed:	No
Medical Certification:	Class 3 With waivers/limitations	Last FAA Medical Exam:	July 26, 2018
Occupational Pilot:	No	Last Flight Review or Equivalent:	August 26, 2016
Flight Time:	4089.4 hours (Total, all aircraft), 930 hours (Total, this make and model), 33 hours (Last 90 days, all aircraft), 12 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Schweizer	Registration:	N3625Z
Model/Series:	269C	Aircraft Category:	Helicopter
Year of Manufacture:	1985	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	S1194
Landing Gear Type:	Skid	Seats:	3
Date/Type of Last Inspection:	September 1, 2017 Annual	Certified Max Gross Wt.:	2050 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	3474.5 Hrs as of last inspection	Engine Manufacturer:	Lycoming
ELT:	Not installed	Engine Model/Series:	H10-360-A1A
Registered Owner:	On file	Rated Power:	190 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:	FAR,901 ft msl	Distance from Accident Site:	17 Nautical Miles
Observation Time:	10:53 Local	Direction from Accident Site:	27°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	/	Turbulence Type Forecast/Actual:	None / None
Wind Direction:		Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	30.01 inches Hg	Temperature/Dew Point:	24°C / 14°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	McLeod, ND	Type of Flight Plan Filed:	None
Destination:	Fargo, ND (FAR)	Type of Clearance:	None
Departure Time:	10:15 Local	Type of Airspace:	Class G

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Destroyed
Passenger Injuries:		Aircraft Fire:	On-ground
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	1 None	Latitude, Longitude:	46.667778,-97.008056(est)

Administrative Information

Investigator In Charge (IIC):	Fox, Andrew
Additional Participating Persons:	Perry W Ochsner; Federal Aviation Administration - Fargo FSDO; Fargo, ND
Original Publish Date:	August 24, 2021
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=98084

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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](#).