



Aviation Investigation Final Report

Location:	LAKELAND, Florida	Accident Number:	MIA00LA134
Date & Time:	April 15, 2000, 10:30 Local	Registration:	N301CH
Aircraft:	Hiller UH-12C	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot was hovering to parking when the helicopter experienced a failure of the tail rotor drive shaft. The pilot attempted a hovering autorotation, hovering he did not apply collective pitch. The helicopter collided with the ground in a right skid low condition and rolled over on its right side. Examination of the tailrotor drive shaft revealed excessive wear on the splines to the upper U-joint and on the splines of the transmission output shaft.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The disconnection of the tail rotor drive shaft and subsequent lack of tail rotor control. Contributing factors were the worn drive shaft splines and the pilots' failure to apply collective on the touchdown resulting in a hard landing and subsequent roll over.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: HOVER - IN GROUND EFFECT

Findings

1. (C) ROTOR DRIVE SYSTEM, TAIL ROTOR DRIVE SHAFT - DISCONNECTED
2. (F) MISCELLANEOUS, AIRFRAME - WORN

Occurrence #2: LOSS OF CONTROL - IN FLIGHT

Phase of Operation: HOVER - IN GROUND EFFECT

Findings

3. TAIL ROTOR/ANTI-TORQUE CONTROL - NOT AVAILABLE

Occurrence #3: HARD LANDING

Phase of Operation: LANDING

Findings

4. (F) COLLECTIVE - NOT USED - PILOT IN COMMAND

Occurrence #4: ROLL OVER

Phase of Operation: LANDING - FLARE/TOUCHDOWN

Factual Information

On April 15, 2000, at about 1030 eastern daylight time, a Hiller UH-12C, N301CH, registered to a private owner, operating as a 14 CFR Part 91 personal flight, crashed after experiencing a loss of tail rotor control while hovering to park at the Lakeland-Linder Regional Airport, Lakeland, Florida. Visual meteorological conditions prevailed and no flight plan was filed. The private pilot reported minor injuries. The helicopter sustained substantial damage. The flight originated from Plant City, Florida, about 15 minutes before the accident.

The pilot stated he had just landed and was cleared to parking. While hovering at 4 feet, he made a right antitorque pedal turn. He applied left antitorque pedal to stop the turn and the helicopter continued to yaw to the right. He applied left antitorque pedal and closed the throttle. He did not pull collective pitch. The helicopter collided with the ground in a right skid low condition and rolled over on its right side.

Examination of the helicopter revealed the tailrotor drive shaft was disconnected from the output spline shaft of the main transmission. The drive shaft was removed from the lower U-joint (Carden joint). One bolt was missing from the attachment of lower joint flange. The splines inside the upper U-joint were extensively worn, to the point of being non-existent from the forward end to about 1 inch inside the fork. There was also excessive wear on the splines of the transmission output shaft. For additional information see FAA Aviation Safety Inspector statement.

Pilot Information

Certificate:		Age:	U
Airplane Rating(s):		Seat Occupied:	Unknown
Other Aircraft Rating(s):		Restraint Used:	
Instrument Rating(s):		Second Pilot Present:	
Instructor Rating(s):		Toxicology Performed:	No
Medical Certification:	Unknown Unknown	Last FAA Medical Exam:	
Occupational Pilot:	UNK	Last Flight Review or Equivalent:	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	Hiller	Registration:	N301CH
Model/Series:	UH-12C UH-12C	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:		Serial Number:	
Landing Gear Type:		Seats:	
Date/Type of Last Inspection:	Unknown	Certified Max Gross Wt.:	
Time Since Last Inspection:		Engines:	Unknown
Airframe Total Time:		Engine Manufacturer:	
ELT:		Engine Model/Series:	
Registered Owner:		Rated Power:	
Operator:	KENNETH L. GRIMES	Operating Certificate(s) Held:	None
Operator Does Business As:		Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Not reported
Observation Facility, Elevation:	LAL	Distance from Accident Site:	
Observation Time:	10:50 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Scattered / 6000 ft AGL	Visibility	12 miles
Lowest Ceiling:	Overcast / 6000 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	6 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	180°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	24°C / 21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	PLANT CITY , FL (TCM)	Type of Flight Plan Filed:	None
Destination:	(LAL)	Type of Clearance:	
Departure Time:	00:00 Local	Type of Airspace:	

Airport Information

Airport:		Runway Surface Type:	
Airport Elevation:		Runway Surface Condition:	
Runway Used:	0	IFR Approach:	
Runway Length/Width:		VFR Approach/Landing:	

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	Unknown
Ground Injuries:	N/A	Aircraft Explosion:	Unknown
Total Injuries:	1 Minor	Latitude, Longitude:	27.970167,-81.939926(est)

Administrative Information

Investigator In Charge (IIC):	Smith, Carrol
Additional Participating Persons:	ALBERT KIMBALL;
Original Publish Date:	January 18, 2001
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=48964

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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](#).