



Aviation Investigation Final Report

Location:	COTTONDALE, Florida	Accident Number:	ATL96LA104
Date & Time:	July 11, 1996, 17:30 Local	Registration:	N102HT
Aircraft:	Hiller UH-12E	Aircraft Damage:	Substantial
Defining Event:		Injuries:	2 None
Flight Conducted Under:	Part 91: General aviation		

Analysis

Approximately two minutes into the climbout, the pilots felt a vibration in the airframe followed by a loud bang. The pilots entered an autorotation and selected a field for a forced landing. The pilots reported that, subsequently, as they were attempting to control the helicopter, the flight controls would not respond to inputs. Control of the helicopter was lost, and it impacted the ground inverted. Examination of the helicopter disclosed that the main drive clutch and engine gimble ring with the torsional coupling had failed. Debris from the failed components was not recovered for examination. A review of the maintenance logs showed that the drive coupling assembly had 511 hours of total service since new. Wreckage examination also disclosed that the entire transmission assembly had rotated from its normally installed position, and that the flight control rods were displaced from their normal position.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: failure of the main rotor drive torsional coupling and inner gimbal ring, which resulted in jamming of the flight controls during an attempted autorotation.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: CRUISE

Findings

1. (C) ROTOR DRIVE SYSTEM,ENGINE TO TRANSMISSION DRIVE - FAILURE,TOTAL

Occurrence #2: FORCED LANDING

Phase of Operation: EMERGENCY DESCENT/LANDING

Findings

2. AUTOROTATION - INITIATED - PILOT IN COMMAND

Occurrence #3: LOSS OF CONTROL - IN FLIGHT

Phase of Operation: EMERGENCY DESCENT/LANDING

Findings

3. ROTORCRAFT FLIGHT CONTROL - JAMMED

Occurrence #4: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: DESCENT - UNCONTROLLED

Factual Information

On July 11, 1996, at 1730 central daylight time, a Hiller UH-12E, N102HT collided with the ground and was substantially damaged during a forced landing near Cottondale, Florida. Neither of the two commercial pilots were injured. The helicopter was being operated under the provisions of Title 14 CFR Part 91 by the pilot. Visual meteorological conditions prevailed at the time of the accident, and no flight plan was filed for the local flight. The flight departed Jackson Heliport at 1715 Central Daylight Time.

Approximately two minutes into the climbout, the pilots felt a vibration in the airframe followed by a loud bang. The pilots initially stated that the helicopter had lost tail rotor control, at which time they selected a field for a forced landing. As the pilots attempted to control the helicopter, they reported that the flight controls would not respond to the inputs. Total control of the helicopter was lost; the helicopter impacted the ground inverted.

Examination of the helicopter disclosed that the main drive clutch and engine gimble ring with the torsional coupling had failed. Debris from the failed components was not recovered for examination. A review of the maintenance logs showed that the drive coupling assembly had 511 hours of total time in service since new. The wreckage examination also disclosed that the entire transmission assembly had rotated from its normally installed position, and that the flight control rods were displaced from their normal positions.

Pilot Information

Certificate:	Commercial	Age:	45, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Center
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	January 10, 1996
Occupational Pilot:	UNK	Last Flight Review or Equivalent:	
Flight Time:	5567 hours (Total, all aircraft), 77 hours (Total, this make and model), 5493 hours (Pilot In Command, all aircraft), 166 hours (Last 90 days, all aircraft), 2 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Hiller	Registration:	N102HT
Model/Series:	UH-12E UH-12E	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Restricted (Special)	Serial Number:	5218
Landing Gear Type:	Skid	Seats:	3
Date/Type of Last Inspection:	July 5, 1996 Annual	Certified Max Gross Wt.:	3100 lbs
Time Since Last Inspection:	3 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	515 Hrs	Engine Manufacturer:	Lycoming
ELT:	Not installed	Engine Model/Series:	VO-540-C2A
Registered Owner:	HELICOPTER TECHNOLOGY, INC.	Rated Power:	305 Horsepower
Operator:	JAMES E WILLOUGHBY	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:	Day
Observation Facility, Elevation:	DHN ,401 ft msl	Distance from Accident Site:	40 Nautical Miles
Observation Time:	17:50 Local	Direction from Accident Site:	350°
Lowest Cloud Condition:	Scattered / 5000 ft AGL	Visibility	6 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	10 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	60°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	32°C / 22°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	JACKSON HELPRT , FL	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	17:42 Local	Type of Airspace:	Class G

Airport Information

Airport:		Runway Surface Type:	
Airport Elevation:		Runway Surface Condition:	
Runway Used:	0	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	30.789545,-85.370452(est)

Administrative Information

Investigator In Charge (IIC):	Powell, Phillip
Additional Participating Persons:	TOM MILLER; BITMINGHAM , AL
Original Publish Date:	April 29, 1997
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=3739

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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](#).