Aviation Investigation Final Report

Location:	Clay, New York	**Accident Number:**	NYC01LA167
Date & Time:	July 9, 2001, 17:25 Local	**Registration:**	N7028V
Aircraft:	Hughes 269A	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The helicopter was in cruise flight when the pilot heard a "bang," and lost tailrotor authority. The pilot maneuvered for landing, and then reduced airspeed in anticipation of landing. The helicopter began to rotate. About 30 to 50 feet agl, the pilot pulled collective to cushion the landing. The helicopter impacted the ground and rolled onto its side. The helicopter received an annual inspection 11 months and 23.3 flight hours prior to the accident. During the annual inspection, the mechanic documented that airworthiness directive (AD) 76-18-01 had been complied with. Examination of the left aft cluster fitting revealed that the tailboom attaching point had separated severing the tailrotor drive shaft. The fracture surfaces for the cluster fitting were relatively flat with smooth curving boundaries, "features typical of fatigue." Most of the relatively rough area in the lower lug had curving arrest lines, "features typical of low-cycle fatigue." AD 76-18-01 stated that within 50 flight hours of the effective date of the AD, and thereafter at intervals not to exceed 50 hours of flight time, or until modifications are accomplished, the tailboom support strut aluminum end fittings were to be visually inspected for deformation or damage, and then checked for cracking using dye penetrant. If cracking or damage was identified the effected structure would have had to been replaced. The AD required the dye penetrant inspection be done in accordance with Service Information Notice N-82.3. In addition, the Service Information Notice stated that a daily visual inspection was required, which the pilot stated he performed prior to the flight.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Failure of the left aft cluster fitting due to a fatigue crack. Factors in the accident were the mechanic's failure to identify the crack at the last annual inspection, and the pilot's failure to identify the crack during the last daily inspection

Findings

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

Findings
1. (C) MISC ROTORCRAFT,TAIL BOOM - FATIGUE
2. (F) MAINTENANCE,ANNUAL INSPECTION - INADEQUATE - OTHER MAINTENANCE PERSONNEL
3. (F) AIRCRAFT PREFLIGHT - INADEQUATE - PILOT IN COMMAND

Factual Information

On July 9, 2001, about 1725 eastern daylight time, a Hughes 269A, N7028V, was substantially damaged when it rolled over during a precautionary landing near Clay, New York. The certificated commercial pilot and passenger received minor injuries. Visual meteorological conditions prevailed for the personal flight that originated from the Oswego County Airport (FZY), Fulton, New York, destined for the Hancock International Airport (SYR), Syracuse, New York. A flight plan was not filed, and the flight was conducted under 14 CFR Part 91.

According to the pilot, he was in cruise flight when he heard a "bang." He then advised Syracuse Air Traffic Control Tower that he was making a precautionary landing. The pilot identified an area, and turned the helicopter 180 degrees to maneuver for his anticipated landing point. During the turn, the pilot looked back at the tailrotor and saw that it was still rotating, but he did not have tailrotor authority. The pilot lowered the collective and started a descent. He then started to reduce the airspeed in anticipation of landing. The helicopter began to rotate, and 30 to 50 feet agl, the pilot pulled collective to cushion the "fall." The helicopter impacted the ground and rolled onto its left side. The pilot and passenger then egressed.

According to a Federal Aviation Administration inspector, initial examination of the left tailboom support cluster fitting revealed that the left tailboom attaching point had separated, and the fracture surfaces were dark in color. The tailrotor drive shaft was severed where it entered the aft portion of the fuselage. Both sections of the shaft displayed rotational scoring.

According to maintenance records, the helicopter received an annual inspection on July 26, 2000, 23.3 flight hours prior to the accident. During the annual inspection, the mechanic documented that he preformed the requirements of airworthiness directive (AD) 76-18-01

According to a factual report generated by the Safety Board's Materials Laboratory, portions of the fracture surfaces for the cluster fitting lugs were relatively flat with smooth curving boundaries, "features typical of fatigue." Most of the relatively rough area in the lower lug had curving arrest lines, "features typical of low-cycle fatigue."

According to AD 76-18-01, within 50 flight hours of the effective date of the AD, and thereafter at intervals not to exceed 50 hours of flight time, or until modifications were accomplished, the cluster fittings were to be visually inspected for deformation or damage, and then checked for cracking using dye penetrant. If cracking or damage was identified, the effected structure would have had to be replaced. The AD also required the dye penetrant inspection be done in accordance with Service Information Notice N-82.3, which stated that the paint be removed from the fitting prior to the inspection. If the fitting was serviceable, a wash coat of zinc chromate primer, and then a coat of epoxy enamel would have had to been applied. In

addition, the Service Information Notice stated that a daily visual inspection was required.

According to the mechanic, he inspected the cluster fitting in accordance with the AD and the Information Service Notice when he preformed the annual inspection. In addition, the pilot stated that he performed a visual inspection of the aft clevis lugs prior to the first flight of the day, to include the accident flight.

Pilot Information

Certificate:	Commercial	**Age:**	46,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	September 8, 1999
Occupational Pilot:		**Last Flight Review or Equivalent:**	May 15, 2000
Flight Time:	14000 hours (Total, all aircraft), 1700 hours (Total, this make and model), 13800 hours (Pilot In Command, all aircraft), 250 hours (Last 90 days, all aircraft), 100 hours (Last 30 days, all aircraft), 6 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Hughes	**Registration:**	N7028V
Model/Series:	269A	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	76-0622
Landing Gear Type:	Skid	**Seats:**	2
Date/Type of Last Inspection:	July 26, 2000 Annual	**Certified Max Gross Wt.:**	1365 lbs
Time Since Last Inspection:	23.3 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	5631.75 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:		**Engine Model/Series:**	HT-36A
Registered Owner:	Mark R. Parker	**Rated Power:**	180 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	SYR,421 ft msl	**Distance from Accident Site:**	6 Nautical Miles
Observation Time:	17:54 Local	**Direction from Accident Site:**	145°
Lowest Cloud Condition:	Few / 6500 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	310°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.76 inches Hg	**Temperature/Dew Point:**	29°C / 14°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	FULTON, NY (FZY)	**Type of Flight Plan Filed:**	None
Destination:	SYRACUSE, NY (SYR)	**Type of Clearance:**	None
Departure Time:	16:15 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Minor	**Latitude, Longitude:**	43.180606,-76.170242(est)

Administrative Information

Investigator In Charge (IIC):	Muzio, David
Additional Participating Persons:	Tom Williams; FAA/FSDO; Rochester, NY
Original Publish Date:	January 2, 2002
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=52657