



Aviation Investigation Factual Report

Location:	Conroe, Texas	Accident Number:	FTW03LA134
Date & Time:	April 19, 2003, 11:30 Local	Registration:	N16Q
Aircraft:	Hughes 369HS	Aircraft Damage:	Substantial
Defining Event:		Injuries:	2 None
Flight Conducted Under:	Part 91: General aviation - Aerial observation		

Factual Information

On April 19, 2003, approximately 1130 central daylight time, a Hughes 369HS helicopter, N16Q, was substantially damaged while maneuvering near the shoreline of Lake Conroe near Conroe, Texas. The helicopter was owned and operated by SKJ, Inc., of Montgomery, Texas, under 14 Code of Federal Regulations Part 91. The commercial pilot, who occupied the left front seat, and his passenger/observer, who occupied the right front seat, were not injured. Visual meteorological conditions prevailed for the local aerial observation flight, and a flight plan was not filed. The flight originated from the operators private helipad near Lake Conroe, approximately 1100.

On the Pilot/Operator Aircraft Accident Report (NTSB Form 6120.1/2) the pilot reported that he and the observer were assisting local authorities during a search mission involving a boating incident on the lake. The pilot flew the helicopter 20-30 feet over the water on a north-south pass parallel to the shoreline. Based on the observers sighting in the water, the pilot turned the helicopter to the left (made a 180-degree turn), flew over the lake, and then inbound near the shoreline. After flying about 100 yards, the helicopter experienced a loss of tail rotor effectiveness and entered a spin to the right, impacted the water, and came to rest on its left side in approximately 2 or 3 feet of water.

A review of the available pilot records and the FAA records revealed the commercial pilot held airplane single-engine land, multiengine land, and rotorcraft-helicopter ratings. He was issued a second class medical certificate on March 20, 2003, without limitations. On the Pilot/Operator Aircraft Accident report (NTSB Form 6120.1/2) the pilot reported a total of 2,235.8 hours (321.2 hours rotorcraft of which 194.4 hours was in N16Q).

At 1053, the local weather observation facility at Conroe reported the wind from 130 degrees at 9 knots, visibility 10 statute miles, scattered clouds at 2,600 feet, temperature 23 degrees Celsius, dew point 19 degrees Celsius, and altimeter setting of 29.88 inches of Mercury.

A review of available maintenance records indicated the airframe had accumulated 8,320.0 hours as of March 16, 2003. The last annual inspection was performed on December 6, 2002, at an accumulated time of 8,235.5 hours. During the annual inspection the following tail rotor service was performed: tail rotor gearbox attaching bolts, feather bearings, and conical bearings were replaced. The tail rotor hub and blade assembly were re-centered and tail rotor re-balanced. The last tail rotor balance check was performed on March 16, 2003, and the tail rotor balance was within limits and no adjustments were made to the system. In July 2001, the tail rotor transmission (gearbox) part number 369A5400-701, serial number A-824, was removed for chips "making metal", repaired, tested, and reinstalled at 7,160.2 hours.

The helicopter was recovered from the lake by Shoreline Services, Willis, Texas. The helicopter

was examined by the manufacturer's representative, under the supervision of the FAA inspector. According to the manufacturer's representative, the main rotor system hub assembly and components exhibited visible damage "consistent with sudden stoppage and high blade flapping angles associated with main rotor blade contact with fuselage/water/ground." Continuity was confirmed for the main transmission, and from the main transmission to the tail rotor output pinion and tail rotor driveshaft. The main rotor driveshaft would not turn, and the splined end of the main rotor driveshaft was fractured consistent with overload. According to the manufacturer's representative, the "tail rotor driveshaft was fractured and exhibited wind up associated with sudden stoppage. The driveshaft exhibited twisting in the shaft approximately 8 inches aft of the forward Bendix coupling." The main rotor driveshaft, the twisted portion of the tail rotor driveshaft, and the tail rotor transmission were retained for further examination.

On June 3, 2003, under the supervision of the FAA, the main rotor driveshaft (part number 369A5500-901, serial number 0123), the tail rotor driveshaft (part number 369A5518-601, serial number 8005), and the tail rotor transmission (part number 369A5400-701, serial number A824, were examined at The Boeing Company, Mesa, Arizona. According to the manufacturer's representative, the investigation "has not identified any fault or malfunction of any helicopter system that could be considered causal to the accident." Further, the main rotor driveshaft and the tail rotor driveshaft, "fractured in torsional overload."

The NTSB metallurgist, who reviewed the Boeing Company metallurgist report, concurs that the "report adequately describes the overstress fractures to the main driveshaft, the tail rotor driveshaft, and the forward Bendix coupling as well as the lack of damage to the tail rotor gearbox components. None of the damage to the components was causal to the accident."

Pilot Information

Certificate:	Commercial; Private	Age:	52, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	March 20, 2003
Occupational Pilot:	UNK	Last Flight Review or Equivalent:	
Flight Time:	2236 hours (Total, all aircraft), 195 hours (Total, this make and model), 2087 hours (Pilot In Command, all aircraft), 19 hours (Last 90 days, all aircraft), 5 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Hughes	Registration:	N16Q
Model/Series:	369HS	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	1290227S
Landing Gear Type:	Skid	Seats:	4
Date/Type of Last Inspection:	December 6, 2002 Annual	Certified Max Gross Wt.:	
Time Since Last Inspection:		Engines:	1 Turbo shaft
Airframe Total Time:	8330.2 Hrs as of last inspection	Engine Manufacturer:	Allison
ELT:	Not installed	Engine Model/Series:	250-C20B
Registered Owner:	SKJ, Inc.	Rated Power:	250 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:	CX0,245 ft msl	Distance from Accident Site:	5 Nautical Miles
Observation Time:	10:53 Local	Direction from Accident Site:	90°
Lowest Cloud Condition:	Scattered / 2600 ft AGL	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	9 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	130°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.87 inches Hg	Temperature/Dew Point:	23°C / 19°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Montgomery, TX	Type of Flight Plan Filed:	None
Destination:	Conroe, TX	Type of Clearance:	VFR
Departure Time:	11:00 Local	Type of Airspace:	Class G

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:	30.351943,-95.414443

Administrative Information

Investigator In Charge (IIC):	Roach, Joyce
Additional Participating Persons:	Thomas R Stunda; FAA FSDO; Houston, TX Adrian Booth; The Boeing Company; Mesa, AZ
Report Date:	November 13, 2003
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=56845

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