





Aviation Investigation Final Report

Location: HOUSTON, Texas Accident Number: FTW99TA190

Date & Time: July 14, 1999, 21:51 Local Registration: N7491F

Aircraft: Hughes 269C Aircraft Damage: Substantial

Defining Event: 1 Minor, 1 None

Flight Conducted Under: Part 91: General aviation - Instructional

Analysis

During a night instructional flight, the helicopter landed hard during a practice autorotation following a simulated engine failure during takeoff. The operator stated that the toe of the right landing gear skid sank into the ground, and the helicopter made a 90 degree turn. The main rotor blades made contact with and severed the tailboom of the helicopter. The operator reported that the maneuver was entered below the recommended airspeed of 60 knots, and consequently a high rate of sink developed during the landing flare, which the pilot receiving instruction was unable to arrest. No mechanical malfunction or failure was reported by either the pilot or the operator.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The hard landing as a result of the flight instructor's failure to attain the proper airspeed before simulating an engine failure, which resulted in the development of a high sink rate. Factors were the night illumination and the soft ground.

Findings

Occurrence #1: HARD LANDING

Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings

1. (F) LIGHT CONDITION - NIGHT

- 2. (C) AIRSPEED NOT ATTAINED PILOT IN COMMAND(CFI)
- 3. EMERGENCY PROCEDURE SIMULATED PILOT IN COMMAND(CFI)
- 4. AUTOROTATION INITIATED DUAL STUDENT
- 5. (C) PROPER DESCENT RATE NOT POSSIBLE DUAL STUDENT
- 6. (F) TERRAIN CONDITION SOFT
- 7. MISC ROTORCRAFT, MAIN ROTOR/TAIL BOOM CONTACT

Page 2 of 6 FTW99TA190

Factual Information

On July 14, 1999, at 2151 central daylight time, a Hughes 269C helicopter, N7491F, was substantially damaged during a hard landing at the Houston Hobby Airport (HOU), near Houston, Texas. The flight instructor was not injured and the commercial pilot receiving instruction sustained minor injuries. The helicopter was owned and operated by the Houston Police Department. Night visual meteorological conditions prevailed for the Title 14 CFR Part 91 instructional flight for which a company flight plan was filed. The flight originated from the Houston Hobby Airport about 30 minutes prior to the accident.

According to personnel at the airport, the helicopter was conducting night training operations as part of the night check out for the 281-hour pilot receiving instruction. The helicopter had been cleared by Houston Hobby Control Tower to maneuver in the grassy area between Taxiway Golf and Runway 17, located on the west side of the airport.

The scheduled night check-out was the final phase in the pilot's training prior to being signed-off as pilot-in-command during operational missions. The scope of the check-out covered all normal and emergency operations, including full touchdown and power recovered autorotations. Simulated engine failures were initiated in all phases of the flight, to include simulated engine failures on takeoff, hovering autorotations, straight-in autorotations, 180-degree turn autorotations, and 90-degree turn autorotations.

The operator reported that a total of 12 autorotations had been satisfactorily completed during the flight. The last maneuver to be evaluated was the simulated engine failure during takeoff. This maneuver was to be initiated by the flight instructor after the helicopter had attained a minimum airspeed of 60 knots, and a minimum altitude of 50 feet agl. The maneuver was performed satisfactorily once.

In a telephone interview, the operator reported that during a second simulated engine failure during takeoff, the helicopter landed hard, the toe of the right landing gear skid sunk into the ground, and the helicopter made a 90-degree turn. The operator added that the maneuver was initiated slightly below the recommended airspeed of 60 knots, which contributed to a high rate of descent developing, which the pilot was unable to arrest during the landing flare.

The main rotor blades came in contact with the aft fuselage, severing the tailboom. The right rear landing strut collapsed; however, the helicopter remained in the upright position. No mechanical malfunction or failure was reported by either the pilot or the operator.

The FAA inspector, who responded to the accident site, confirmed that the airframe and tailboom of the helicopter sustained structural damage. A review of the helicopter's maintenance records by the FAA inspector did not reveal any evidence of overdue inspections

Page 3 of 6 FTW99TA190

or uncorrected discrepancies that could have contributed to the accident.

Pilot Information

Certificate:	Commercial; Flight instructor	Age:	38,Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	Helicopter	Toxicology Performed:	No
Medical Certification:	Class 2 Valid Medicalno waivers/lim.	Last FAA Medical Exam:	June 15, 1999
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	3500 hours (Total, all aircraft), 300 hours (Total, this make and model), 3000 hours (Pilot In Command, all aircraft), 100 hours (Last 90 days, all aircraft), 40 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Hughes	Registration:	N7491F
Model/Series:	269C 269C	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	350400
Landing Gear Type:	Skid	Seats:	2
Date/Type of Last Inspection:	June 15, 1999 AAIP	Certified Max Gross Wt.:	2050 lbs
Time Since Last Inspection:	20 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	11393 Hrs	Engine Manufacturer:	Lycoming
ELT:	Not installed	Engine Model/Series:	HIO-360-D1A
Registered Owner:	CITY OF HOUSTON	Rated Power:	190 Horsepower
Operator:		Operating Certificate(s) Held:	None
Operator Does Business As:	HOUSTON POLICE DEPARTMENT	Operator Designator Code:	

Page 4 of 6 FTW99TA190

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Night/dark
Observation Facility, Elevation:	HOU ,47 ft msl	Distance from Accident Site:	1 Nautical Miles
Observation Time:	21:53 Local	Direction from Accident Site:	90°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	5 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	170°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	26°C / 23°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(HOU)	Type of Flight Plan Filed:	Company VFR
Destination:		Type of Clearance:	VFR
Departure Time:	21:21 Local	Type of Airspace:	Class B

Airport Information

Airport:	HOUSTON HOBBY AIRPORT HOU	Runway Surface Type:	Grass/turf
Airport Elevation:	47 ft msl	Runway Surface Condition:	Soft;Wet
Runway Used:	0	IFR Approach:	
Runway Length/Width:	1000 ft / 150 ft	VFR Approach/Landing:	Simulated forced landing

Wreckage and Impact Information

Crew Injuries:	1 Minor, 1 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Minor, 1 None	Latitude, Longitude:	29.649597,-95.279739(est)

Page 5 of 6 FTW99TA190

Administrative Information

Investigator In Charge (IIC): Casanova, Hector

Additional Participating MICHAEL D KNUCKEY; HOUSTON , TX
Persons:

Original Publish Date: November 30, 2000

Last Revision Date:

Investigation Class: Class
Note:

Investigation Docket: https://data.ntsb.gov/Docket?ProjectID=46791

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

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.

Page 6 of 6 FTW99TA190