



Aviation Investigation Final Report

Location:	Ardmore, Oklahoma	Accident Number:	FTW02LA044
Date & Time:	December 1, 2001, 10:30 Local	Registration:	N5226
Aircraft:	Bell 47G	Aircraft Damage:	Substantial
Defining Event:		Injuries:	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The student pilot had completed three power recovery autorotations to the south, and the flight instructor was to demonstrate a "full touchdown autorotation" to end the training session. The flight instructor initiated the autorotation at 1,500 feet msl and 60 knots to the airport's mid-field median. After slowing to 40 knots, the instructor began a flare to reduce the airspeed to 15-20 knots. At 10 feet agl, he pulled collective to cushion the landing. The helicopter touched down on the soft grassy area and slid for approximately 10 feet before starting to nose over. "The tail of the helicopter pitched upward into the blades, severing it." The helicopter rotated left approximately 270 degrees before coming to rest upright. The flight instructor stated that "weather had saturated the ground and caused the sod to be soft on the usual landing area. It was not visible from the helicopter."

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the flight instructor's selection of an unsuitable area for practicing a full touchdown autorotation, which resulted in a nose over. A contributing factor was the soft ground.

Findings

Occurrence #1: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER
Phase of Operation: LANDING - ROLL

Findings

1. EMERGENCY PROCEDURE - SIMULATED - PILOT IN COMMAND(CFI)
2. (C) UNSUITABLE TERRAIN OR TAKEOFF/LANDING/TAXI AREA - SELECTED - PILOT IN COMMAND(CFI)
3. (F) TERRAIN CONDITION - SOFT

Occurrence #2: NOSE OVER
Phase of Operation: LANDING - ROLL

Findings

4. MISC ROTORCRAFT,MAIN ROTOR/TAIL BOOM CONTACT

Factual Information

On December 1, 2001, at 1030 central standard time, a Bell 47G helicopter, N5226, was substantially damaged during a practice autorotational landing at the Ardmore Downtown Executive Airport near Ardmore, Oklahoma. The helicopter was registered to a private individual and operated by Versatile Helicopters, Inc., dba Versatile Aviation of Ardmore, Oklahoma. The flight instructor and the private pilot rated student were not injured. Visual meteorological conditions prevailed, and a flight plan was not filed for the 14 Code of Federal Regulations Part 91 instructional flight. The local flight originated from the Ardmore Downtown Executive Airport, approximately one hour prior to the accident.

The student pilot had completed three power recovery autorotations to the south, and the flight instructor was to demonstrate "a full touchdown autorotation" to end the training session. The flight instructor initiated the autorotation at 1,500 feet msl and 60 knots to the mid-field median. After slowing to 40 knots, the instructor began a flare to reduce the airspeed to 15-20 knots. At 10 feet agl, he pulled collective to cushion the landing. The helicopter touched down on the soft grassy area and slid for approximately 10 feet before starting to nose over. "The tail of the helicopter pitched upward into the blades, severing it." The helicopter rotated left approximately 270 degrees before coming to rest upright.

The flight instructor stated that "weather had saturated the ground and caused the sod to be soft on the usual landing area. It was not visible from the helicopter."

Flight instructor Information

Certificate:	Commercial; Flight instructor; Private	Age:	33, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Right
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 3 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	April 26, 2001
Occupational Pilot:	UNK	Last Flight Review or Equivalent:	August 21, 2001
Flight Time:	450 hours (Total, all aircraft)		

Student pilot Information

Certificate:	Commercial	Age:	24, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 Valid Medical-w/ waivers/lim	Last FAA Medical Exam:	August 14, 2000
Occupational Pilot:	UNK	Last Flight Review or Equivalent:	September 26, 2000
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	Bell	Registration:	N5226
Model/Series:	47G	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	37
Landing Gear Type:	Skid	Seats:	2
Date/Type of Last Inspection:	100 hour	Certified Max Gross Wt.:	2350 lbs
Time Since Last Inspection:	18 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	15438 Hrs	Engine Manufacturer:	Franklin
ELT:	Not installed	Engine Model/Series:	6A-355-B1
Registered Owner:	Versatile Helicopters, Inc.	Rated Power:	180 Horsepower
Operator:		Operating Certificate(s) Held:	None
Operator Does Business As:	Versatile Aviation	Operator Designator Code:	HFZS

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	1F0,844 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	10:29 Local	Direction from Accident Site:	0°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	/ None	Turbulence Type Forecast/Actual:	/
Wind Direction:	0°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.2 inches Hg	Temperature/Dew Point:	11°C / 6°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Ardmore, OK (1F0)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	09:30 Local	Type of Airspace:	Class E

Airport Information

Airport:	Ardmore Downtown Executive 1F0	Runway Surface Type:	Grass/turf
Airport Elevation:	844 ft msl	Runway Surface Condition:	Soft
Runway Used:		IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Full stop;Traffic pattern

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:	34.14611,-97.122497

Administrative Information

Investigator In Charge (IIC):	Wigington, Doug
Additional Participating Persons:	Michael A Kout; FAA FSDO; Oklahoma City, OK
Original Publish Date:	January 16, 2003
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=53850

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](#).