Aviation Investigation Final Report

Location:	Denton, Texas	**Accident Number:**	GAA19CA250
Date & Time:	May 6, 2019, 10:20 Local	**Registration:**	N5990
Aircraft:	Bell 47G	**Aircraft Damage:**	Substantial
Defining Event:	Other weather encounter	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The student pilot reported that he hovered the helicopter to the parking pad and landed with the helicopter's nose facing north. The skid placement on the parking pad was incorrect, and the flight instructor directed the student to reposition the helicopter about 3 ft to the left. The student brought the helicopter to a hover and repositioned it 3 ft to the left.

However, before the student established a descent and landed, the helicopter encountered a tailwind gust. The nose pitched down, the rotor rpm decreased, and the helicopter traveled about 75 ft forward. The skids contacted the ground hard, and the helicopter came to an abrupt stop, upright and facing downslope. The main rotor blades struck the tail rotor drive shaft and the tailboom. The tail rotor gear box and the tail rotor separated from the helicopter.

The helicopter sustained substantial damage to the tail rotor drive system, the tailboom, and the main rotor blades.

The pilot reported that there were no mechanical malfunctions or failures with the helicopter that would have precluded normal operation.

The airport's METAR reported that, about the time of the accident, the wind was from 180° at 15 knots and that the cloud layer was broken at 800 ft.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The flight instructor's improper decision to instruct the student pilot to establish a hover and reposition the helicopter with a tailwind, which resulted in the student pilot's loss of pitch control.

Findings

Personnel issues	Decision making/judgment - Instructor/check pilot
Personnel issues	Aircraft control - Student/instructed pilot
Aircraft	Pitch control - Not attained/maintained
Environmental issues	Tailwind - Decision related to condition
Environmental issues	Tailwind - Effect on operation

Factual Information

History of Flight

Maneuvering-hover	Other weather encounter (Defining event)
Maneuvering-hover	Loss of control in flight
Landing	Hard landing
Landing	Collision with terr/obj (non-CFIT)
Landing	Part(s) separation from AC

Pilot Information

Certificate:	Student	**Age:**	54,Male
Airplane Rating(s):	None	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	November 15, 2018
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 24 hours (Total, all aircraft), 15 hours (Total, this make and model), 24 hours (Pilot In Command, all aircraft), 15 hours (Last 90 days, all aircraft), 5 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Flight instructor Information

Certificate:	Airline transport; Flight engineer; Flight instructor	**Age:**	61,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	Lap only
Instrument Rating(s):	Airplane; Helicopter	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Helicopter; Instrument airplane; Instrument helicopter	**Toxicology Performed:**	No
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	January 30, 2019
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	February 7, 2019
Flight Time:	(Estimated) 30000 hours (Total, all aircraft), 200 hours (Total, this make and model), 25000 hours (Pilot In Command, all aircraft), 100 hours (Last 90 days, all aircraft), 50 hours (Last 30 days, all aircraft), 10 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Bell	**Registration:**	N5990
Model/Series:	47G 2	**Aircraft Category:**	Helicopter
Year of Manufacture:	1992	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	2396
Landing Gear Type:	Skid	**Seats:**	3
Date/Type of Last Inspection:	June 7, 2018 Annual	**Certified Max Gross Wt.:**	2450 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	3360.1 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Not installed	**Engine Model/Series:**	VO-435-A1
Registered Owner:	On file	**Rated Power:**	270 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KDTO,642 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	15:28 Local	**Direction from Accident Site:**	348°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Broken / 8000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	15 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	180°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.95 inches Hg	**Temperature/Dew Point:**	25°C / 17°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	DENTON, TX (DTO)	**Type of Flight Plan Filed:**	None
Destination:	DENTON, TX (DTO)	**Type of Clearance:**	VFR
Departure Time:	09:00 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	Denton Enterprise DTO	**Runway Surface Type:**	Asphalt
Airport Elevation:	642 ft msl	**Runway Surface Condition:**	Dry
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

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:**	33.20222,-97.198059(est)

Administrative Information

Investigator In Charge (IIC):	Hicks, Michael
Additional Participating Persons:	Johnny Perez ; FAA; Irving, TX
Original Publish Date:	March 3, 2020
Last Revision Date:	
Investigation Class:	Class
Note:	This accident report documents the factual circumstances of this accident as described to the NTSB.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=99392