



# Aviation Investigation Final Report

<b>Location:</b>	Clanton, Alabama	<b>Accident Number:</b>	GAA15CA221
<b>Date &amp; Time:</b>	August 11, 2015, 15:00 Local	<b>Registration:</b>	N74823
<b>Aircraft:</b>	Bell 47D1	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Hard landing	<b>Injuries:</b>	2 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Instructional		

## Analysis

The flight instructor reported that while conducting an approach to landing, terminating at a three foot hover, the student pilot "pulled back on the cyclic and dumped collective", which caused the main rotor blades to contact the tail boom after the helicopter impacted the ground "hard".

The flight instructor reported there were no pre-impact mechanical failures or malfunctions with the airframe or engine that would have precluded normal operation. The helicopter sustained substantial damage to the tail boom and to the empennage.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The student pilot's abrupt cyclic and collective inputs during the approach to land which resulted in abnormal runway contact and a subsequent tail boom strike by the main rotor blades.

## Findings

<b>Personnel issues</b>	Aircraft control - Student/instructed pilot
<b>Aircraft</b>	Main rotor blade system - Incorrect use/operation
<b>Aircraft</b>	Pitch control - Not attained/maintained

## Factual Information

### History of Flight

<b>Landing-flare/touchdown</b>	Abrupt maneuver
<b>Landing-flare/touchdown</b>	Loss of control in flight
<b>Landing-flare/touchdown</b>	Hard landing (Defining event)

### Student pilot Information

<b>Certificate:</b>	Airline transport; Flight instructor	<b>Age:</b>	68
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	Glider	<b>Restraint Used:</b>	Lap only
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	Airplane multi-engine; Airplane single-engine; Instrument airplane	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 2 With waivers/limitations	<b>Last FAA Medical Exam:</b>	May 6, 2015
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	April 28, 2015
<b>Flight Time:</b>	(Estimated) 7320 hours (Total, all aircraft), 3.7 hours (Total, this make and model), 5611 hours (Pilot In Command, all aircraft), 29.5 hours (Last 90 days, all aircraft), 6 hours (Last 30 days, all aircraft), 0.8 hours (Last 24 hours, all aircraft)		

### Flight instructor Information

<b>Certificate:</b>	Commercial; Flight instructor	<b>Age:</b>	63
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Right
<b>Other Aircraft Rating(s):</b>	Helicopter	<b>Restraint Used:</b>	Lap only
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	Airplane single-engine; Helicopter	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 2 With waivers/limitations	<b>Last FAA Medical Exam:</b>	February 20, 2015
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	March 18, 2015
<b>Flight Time:</b>	(Estimated) 6328 hours (Total, all aircraft), 250 hours (Total, this make and model), 6194 hours (Pilot In Command, all aircraft), 52 hours (Last 90 days, all aircraft), 21 hours (Last 30 days, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Bell	<b>Registration:</b>	N74823
<b>Model/Series:</b>	47D1 1	<b>Aircraft Category:</b>	Helicopter
<b>Year of Manufacture:</b>	1953	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	270
<b>Landing Gear Type:</b>	N/A; Skid	<b>Seats:</b>	3
<b>Date/Type of Last Inspection:</b>	July 1, 2015 100 hour	<b>Certified Max Gross Wt.:</b>	2200 lbs
<b>Time Since Last Inspection:</b>	10 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	7861 Hrs as of last inspection	<b>Engine Manufacturer:</b>	FRANKLIN
<b>ELT:</b>	Not installed	<b>Engine Model/Series:</b>	6V4-200-C32
<b>Registered Owner:</b>	GILLILAND, KENNETH L.	<b>Rated Power:</b>	200 Horsepower
<b>Operator:</b>	GILLILAND, KENNETH L.	<b>Operating Certificate(s) Held:</b>	On-demand air taxi (135)

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	KEET, 565 ft msl	<b>Distance from Accident Site:</b>	21 Nautical Miles
<b>Observation Time:</b>	19:53 Local	<b>Direction from Accident Site:</b>	336°
<b>Lowest Cloud Condition:</b>	Few / 4100 ft AGL	<b>Visibility:</b>	10 miles
<b>Lowest Ceiling:</b>		<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	5 knots /	<b>Turbulence Type Forecast/Actual:</b>	/ None
<b>Wind Direction:</b>	320°	<b>Turbulence Severity Forecast/Actual:</b>	/ N/A
<b>Altimeter Setting:</b>	29.95 inches Hg	<b>Temperature/Dew Point:</b>	32°C / 23°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	CLANTON, AL (02A)	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	CLANTON, AL (02A)	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	14:00 Local	<b>Type of Airspace:</b>	Class G

## Airport Information

<b>Airport:</b>	CHILTON COUNTY 02A	<b>Runway Surface Type:</b>	Asphalt
<b>Airport Elevation:</b>	584 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>	26	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	4008 ft / 100 ft	<b>VFR Approach/Landing:</b>	Full stop;Traffic pattern

## Wreckage and Impact Information

<b>Crew Injuries:</b>	2 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	2 None	<b>Latitude, Longitude:</b>	32.851112,-86.608055

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Vanover, Jackie
<b>Additional Participating Persons:</b>	Kevin W Atkins; FAA; Vestavia Hills, AL
<b>Original Publish Date:</b>	September 30, 2015
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	This accident report documents the factual circumstances of this accident as described to the NTSB.
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=91762">https://data.nts.gov/Docket?ProjectID=91762</a>

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