



# Aviation Investigation Factual Report

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<b>Location:</b>	Phoenix, Arizona	<b>Accident Number:</b>	LAX00TA355
<b>Date &amp; Time:</b>	September 29, 2000, 12:00 Local	<b>Registration:</b>	N331SD
<b>Aircraft:</b>	Hughes TH-55A	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	2 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Instructional		

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## Factual Information

On September 29, 2000, at 1200 mountain standard time, a Hughes TH-55A single engine helicopter, N331SD, experienced a main rotor-tail boom strike at the termination of a practice autorotation at Phoenix-Deer Valley Municipal Airport (DVT), Phoenix, Arizona. The helicopter sustained substantial damage; however, the certificated flight instructor and the airplane-rated student were not injured. The helicopter was registered to and operated by the Maricopa County Sheriff's Office as a public-use instructional flight under 14 Code of Federal Regulations Part 91 when the accident occurred. The flight was returning from a round robin flight that departed DVT with stops at local airports before terminating at DVT at the time of the accident. Visual meteorological conditions prevailed at the time and no flight plan had been filed.

The flight instructor reported that he was demonstrating a 180-degree practice autorotation in the north traffic pattern. He said that the entry, airspeed, rate of descent, deceleration, flare, and touchdown were normal. After touchdown he estimated that there was a ground slide of about 5 to 8 feet. As the aircraft stopped, he heard a loud sharp sound that was accompanied by sustained vibration and an uncommanded right yaw of about 30 degrees. He shutdown the engine by pulling the fuel valve and mixture control into the "off" position.

After he and the student exited the helicopter, he noted that the main rotor blades had contacted the tailboom, damaging the tail rotor drive shaft, tail boom, as well as all the main rotor and tail rotor blades. The flight instructor stated that he did not perceive any action or inaction on his part that could be construed as detrimental to the safe outcome of the maneuver.

According to the Federal Aviation Administration inspector who responded to the accident site and examined the helicopter, there were no signs of mechanical problems that would have contributed to the accident.

The flight instructor had accumulated approximately 1,320 hours of helicopter flight time, of which approximately 800 hours were obtained in the same make and model as the accident helicopter.

## Flight instructor Information

<b>Certificate:</b>	Airline transport; Flight instructor	<b>Age:</b>	39, Male
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	Helicopter	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	Airplane multi-engine; Airplane single-engine; Helicopter; Instrument airplane	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>		<b>Last FAA Medical Exam:</b>	August 16, 2000
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	May 30, 1999
<b>Flight Time:</b>	6365 hours (Total, all aircraft), 800 hours (Total, this make and model), 6230 hours (Pilot In Command, all aircraft), 35 hours (Last 90 days, all aircraft), 25 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

## Student pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	37, Male
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Right
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	None	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 2 Valid Medical--no waivers/lim.	<b>Last FAA Medical Exam:</b>	January 1, 2000
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	March 26, 2000
<b>Flight Time:</b>	1978 hours (Total, all aircraft), 54 hours (Total, this make and model), 1674 hours (Pilot In Command, all aircraft), 103 hours (Last 90 days, all aircraft), 45 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Hughes	<b>Registration:</b>	N331SD
<b>Model/Series:</b>	TH-55A TH-55A	<b>Aircraft Category:</b>	Helicopter
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	291105
<b>Landing Gear Type:</b>	Skid	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	December 2, 1999 Annual	<b>Certified Max Gross Wt.:</b>	1670 lbs
<b>Time Since Last Inspection:</b>	16.1 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	10746.7 Hrs at time of accident	<b>Engine Manufacturer:</b>	Textron Lycoming
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	HIO-360-B1A
<b>Registered Owner:</b>	Maricopa County	<b>Rated Power:</b>	160 Horsepower
<b>Operator:</b>		<b>Operating Certificate(s) Held:</b>	None
<b>Operator Does Business As:</b>	Sheriff's Office	<b>Operator Designator Code:</b>	

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Not reported
<b>Observation Facility, Elevation:</b>	PHX,1135 ft msl	<b>Distance from Accident Site:</b>	16 Nautical Miles
<b>Observation Time:</b>	11:55 Local	<b>Direction from Accident Site:</b>	180°
<b>Lowest Cloud Condition:</b>	Scattered / 16000 ft AGL	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	6 knots / None	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	140°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	29 inches Hg	<b>Temperature/Dew Point:</b>	36°C / 14°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	PHOENIX, AZ (DVT )	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Phoenix, AZ (DVT )	<b>Type of Clearance:</b>	VFR
<b>Departure Time:</b>	11:30 Local	<b>Type of Airspace:</b>	Class D

## Airport Information

<b>Airport:</b>	Phoenix Deer Valley DVT	<b>Runway Surface Type:</b>	Asphalt
<b>Airport Elevation:</b>	1478 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>		<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>		<b>VFR Approach/Landing:</b>	Simulated forced landing

## 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>	33.691665,-112.082221

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Crispin, Robert
<b>Additional Participating Persons:</b>	Dean Hennies; Federal Aviation Administration; Scottsdale, AZ
<b>Report Date:</b>	September 15, 2003
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	The NTSB traveled to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.ntsb.gov/Docket?ProjectID=50389">https://data.ntsb.gov/Docket?ProjectID=50389</a>

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](#).