



# Aviation Investigation Final Report

<b>Location:</b>	Anderson, South Carolina	<b>Accident Number:</b>	ERA23LA289
<b>Date &amp; Time:</b>	June 27, 2023, 17:30 Local	<b>Registration:</b>	N90270
<b>Aircraft:</b>	Hughes 269A	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Ground resonance	<b>Injuries:</b>	1 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Flight test		

## Analysis

Prior to the accident flight, the pilot reported experiencing vibrations in the helicopter. The pilot (who was also a mechanic) and another mechanic adjusted the main rotor dampers to address the issue. Following this adjustment, a 10-minute ground run was performed without any observed problems. The pilot then conducted a test flight during which no issues were detected. Upon landing and while reducing the rotor rpm, the helicopter began to shake violently. The pilot attempted to perform the ground resonance recovery procedure and climbed the helicopter, but the vibration worsened, and he subsequently landed. After contacting the ground, the helicopter shook and spun uncontrollably before coming to a stop. The airframe and main rotor were substantially damaged during the accident sequence.

Federal Aviation Administration inspectors examined the helicopter after the accident and found that the yellow main rotor blade's damper had significantly higher torque than the red and blue blades, and that none of the dampers were torqued to the specification in the helicopter's maintenance manual. The manual also described that incorrect torque adjustments of the dampers could result in "...conditions that may result in ground resonance and destruction of the helicopter. During a subsequent discussion with the assisting mechanic, he stated that he, "may have unintentionally over-torqued the blade [damper]." Based on this information, it is likely that the mechanics' improper maintenance of the helicopter's main rotor dampers resulted in the ground resonance event experienced at the conclusion of the post maintenance test flight.

## Probable Cause and Findings

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

The mechanics' improper torquing of the main rotor blade dampers, which resulted in a ground resonance event during landing.

## Findings

<b>Aircraft</b>	Main rotor blade system - Incorrect service/maintenance
<b>Personnel issues</b>	(general) - Maintenance personnel

## Factual Information

### History of Flight

Prior to flight	Aircraft maintenance event
Landing	Ground resonance (Defining event)

### Pilot Information

Certificate:	Airline transport	Age:	53,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	4-point
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Helicopter	Toxicology Performed:	
Medical Certification:	Class 2 With waivers/limitations	Last FAA Medical Exam:	September 26, 2022
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	(Estimated) 8460 hours (Total, all aircraft), 1120 hours (Total, this make and model), 8212 hours (Pilot In Command, all aircraft), 49 hours (Last 90 days, all aircraft), 18 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

### Aircraft and Owner/Operator Information

Aircraft Make:	Hughes	Registration:	N90270
Model/Series:	269A	Aircraft Category:	Helicopter
Year of Manufacture:	1966	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	66-18283
Landing Gear Type:	None; Skid	Seats:	2
Date/Type of Last Inspection:	September 28, 2022 Annual	Certified Max Gross Wt.:	1669 lbs
Time Since Last Inspection:	3 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	6354 Hrs as of last inspection	Engine Manufacturer:	Lycoming
ELT:	Not installed	Engine Model/Series:	HIO-360-81A
Registered Owner:	On file	Rated Power:	180 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	AND,787 ft msl	<b>Distance from Accident Site:</b>	0 Nautical Miles
<b>Observation Time:</b>	17:56 Local	<b>Direction from Accident Site:</b>	5°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	11 knots /	<b>Turbulence Type Forecast/Actual:</b>	None / None
<b>Wind Direction:</b>	250°	<b>Turbulence Severity Forecast/Actual:</b>	N/A / N/A
<b>Altimeter Setting:</b>	29.84 inches Hg	<b>Temperature/Dew Point:</b>	30°C / 17°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Anderson, SC	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Anderson, SC	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>		<b>Type of Airspace:</b>	Class G

## Airport Information

<b>Airport:</b>	Anderson Regional Airport AND	<b>Runway Surface Type:</b>	
<b>Airport Elevation:</b>	781 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>	Full stop

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>		<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 None	<b>Latitude, Longitude:</b>	34.494583,-82.709389

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Alleyne, Eric
<b>Additional Participating Persons:</b>	Cornelius J. Baker; FAA/FSDO; West Columbia, SC
<b>Original Publish Date:</b>	December 7, 2023
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class 4</a>
<b>Note:</b>	The NTSB did not travel to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=192536">https://data.nts.gov/Docket?ProjectID=192536</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](#).