Aviation Investigation Final Report

Location:	Anderson, South Carolina	**Accident Number:**	ERA23LA289
Date & Time:	June 27, 2023, 17:30 Local	**Registration:**	N90270
Aircraft:	Hughes 269A	**Aircraft Damage:**	Substantial
Defining Event:	Ground resonance	**Injuries:**	1 None
Flight Conducted Under:	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 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

Aircraft	Main rotor blade system - Incorrect service/maintenance
Personnel issues	(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

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

Airport Information

Airport:	Anderson Regional Airport AND	**Runway Surface Type:**	
Airport Elevation:	781 ft msl	**Runway Surface Condition:**	Dry
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Full stop

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	34.494583,-82.709389

Administrative Information

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