



Aviation Investigation Final Report

Location:	El Cajon, California	Accident Number:	ANC22LA014
Date & Time:	January 15, 2022, 12:30 Local	Registration:	N502HQ
Aircraft:	Bell 205A-1	Aircraft Damage:	Substantial
Defining Event:	Unknown or undetermined	Injuries:	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The flight instructor stated that he was demonstrating an autorotation to the pilot receiving instruction as part of the company's flight training program. The flight instructor entered the autorotation at an altitude of about 1,500 to 2,000 ft above ground level and reduced the engine's power to flight idle during the descent. When the helicopter reached its power recovery altitude, the instructor attempted to increase the engine's power; however, the engine did not respond. Subsequently, he attempted to recover engine power three times but was unsuccessful. The pilot committed to a touchdown autorotation. On touchdown, the helicopter rocked forward then aft on its skids, and the main rotor blades struck the tailboom, which sustained substantial damage.

A postaccident examination of the engine, governor, and fuel control revealed no preaccident mechanical malfunctions or failures that would have precluded normal operation. As a result, the reason for the partial loss of engine power could not be determined from the available evidence for this investigation.

Probable Cause and Findings

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

A partial loss of engine power for reasons that could not be determined based on the available evidence.

Findings

Not determined	(general) - Unknown/Not determined
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Factual Information

History of Flight

Autorotation	Hard landing
Unknown	Unknown or undetermined (Defining event)

On January 15, 2022, about 1230 Pacific standard time, a Bell 205A-1 helicopter, N502HQ, sustained substantial damage when it was involved in an accident near El Cajon, California. The flight instructor and the pilot receiving instruction were not injured. The helicopter was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

The flight instructor stated that he was demonstrating an autorotation to the pilot receiving instruction as part of the company’s flight training program. The flight instructor entered the autorotation at an altitude of about 1,500 to 2,000 ft above ground level and reduced the engine’s power to flight idle during the descent. When the helicopter reached its power recovery altitude, the instructor attempted to increase the engine’s power, but the engine did not respond. Subsequently, he attempted to recover engine power three times but was unable to do so. The pilot then committed to a touchdown autorotation. On touchdown, the helicopter rocked forward and then aft on its skids, and the main rotor blades struck the tailboom, which sustained substantial damage.

A postaccident examination of the engine, governor, and fuel control (which included a full engine run in accordance with the engine manufacturer’s overhaul manual, full vibration analysis with all parameters within limits. Functional test on the governor to check flow rates and reaction time moving from each parameter to another. Functional test of fuel regulator emergency solenoid, acceleration flow rates were checked, main components of the computer assembly were checked, and borescope inspection) revealed no preaccident mechanical malfunctions or failures that would have precluded normal operation.

Pilot Information

Certificate:	Commercial; Foreign; Private	Age:	47,Male
Airplane Rating(s):	None	Seat Occupied:	Front
Other Aircraft Rating(s):	Helicopter	Restraint Used:	4-point
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	
Medical Certification:	Class 1 Without waivers/limitations	Last FAA Medical Exam:	October 29, 2021
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	December 11, 2021
Flight Time:	8200 hours (Total, all aircraft), 2600 hours (Total, this make and model), 8000 hours (Pilot In Command, all aircraft), 12 hours (Last 90 days, all aircraft), 6 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Student pilot Information

Certificate:	Commercial	Age:	39,Male
Airplane Rating(s):	None	Seat Occupied:	Front
Other Aircraft Rating(s):	Helicopter	Restraint Used:	4-point
Instrument Rating(s):	Helicopter	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	
Medical Certification:	Class 2 None	Last FAA Medical Exam:	January 5, 2021
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	January 14, 2022
Flight Time:	3525 hours (Total, all aircraft), 1 hours (Total, this make and model), 3401 hours (Pilot In Command, all aircraft), 124 hours (Last 90 days, all aircraft), 14 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Bell	Registration:	N502HQ
Model/Series:	205A-1	Aircraft Category:	Helicopter
Year of Manufacture:	1974	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	30172
Landing Gear Type:	Skid	Seats:	11
Date/Type of Last Inspection:	January 10, 2022 AAIP	Certified Max Gross Wt.:	10200 lbs
Time Since Last Inspection:		Engines:	1 Turbo shaft
Airframe Total Time:	24712.8 Hrs as of last inspection	Engine Manufacturer:	Honeywell
ELT:	C126 installed, not activated	Engine Model/Series:	T-53-17A
Registered Owner:	COPTER LEASE LLC TRUSTEE	Rated Power:	1500 Horsepower
Operator:	On file	Operating Certificate(s) Held:	Rotorcraft external load (133), On-demand air taxi (135), Agricultural aircraft (137)
Operator Does Business As:		Operator Designator Code:	H4Q4

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KSEE, 387 ft msl	Distance from Accident Site:	7 Nautical Miles
Observation Time:	01:55 Local	Direction from Accident Site:	291°
Lowest Cloud Condition:	Clear	Visibility:	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	/	Turbulence Type Forecast/Actual:	Unknown / Unknown
Wind Direction:		Turbulence Severity Forecast/Actual:	Unknown / Unknown
Altimeter Setting:	30.11 inches Hg	Temperature/Dew Point:	11°C / 6°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	El Cajon, CA (KSEE)	Type of Flight Plan Filed:	Company VFR
Destination:	El Cajon, CA (KSEE)	Type of Clearance:	None
Departure Time:	11:00 Local	Type of Airspace:	Class G

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	32.948616,-116.76365

Administrative Information

Investigator In Charge (IIC):	Ward, Mark
Additional Participating Persons:	Jay Beaver; FAA-FSDO; San Diego, CA
Original Publish Date:	August 23, 2023
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=104543

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](#).