Aviation Investigation Final Report

Location:	Spanish Fork, Utah	**Accident Number:**	WPR23LA191
Date & Time:	May 15, 2023, 11:00 Local	**Registration:**	N227WM
Aircraft:	ROBINSON HELICOPTER COMPANY R22	**Aircraft Damage:**	Substantial
Defining Event:	Hard landing	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The flight instructor and student pilot performed a straight-in autorotation with a power recovery maneuver to simulate landing the helicopter with a complete power loss. As the instructor demonstrated the autorotation, during the glide, the instructor realized that he was going to overshoot the landing spot, and forced the helicopter out of trim, which enabled the helicopter to increase its decent rate. As the helicopter crossed 100 ft above ground level, the instructor trimmed the helicopter and noted that the helicopter's airspeed and rotor RPMs were about 50 knots and 95%, respectively. The instructor initiated a flare and the helicopter started to sink. He then rolled the engine throttle UP and raised the collective, but the helicopter landed hard. Subsequently, the main rotor struck the tailboom, which sustained substantial damage.

The flight instructor reported no mechanical failures or anomalies that would have precluded normal operation.

Probable Cause and Findings

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

The instructor pilot's improper landing flare during a straight-in autorotation, which resulted in a hard landing.

Findings

Aircraft	Landing flare - Not attained/maintained
Personnel issues	Aircraft control - Instructor/check pilot

Factual Information

History of Flight

Autorotation	Hard landing (Defining event)
Autorotation	Collision with terr/obj (non-CFIT)

Flight instructor Information

Certificate:	Commercial; Flight instructor	**Age:**	26,Male
Airplane Rating(s):	None	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	3-point
Instrument Rating(s):	Helicopter	**Second Pilot Present:**	
Instructor Rating(s):	Helicopter; Instrument helicopter	**Toxicology Performed:**	
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	May 5, 2023
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	April 20, 2023
Flight Time:	357.3 hours (Total, all aircraft), 270.7 hours (Total, this make and model), 312.2 hours (Pilot In Command, all aircraft), 167.6 hours (Last 90 days, all aircraft), 99.4 hours (Last 30 days, all aircraft), 7.2 hours (Last 24 hours, all aircraft)		

Student pilot Information

Certificate:	Student	**Age:**	26,Male
Airplane Rating(s):	None	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	None	**Second Pilot Present:**	
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 62.6 hours (Total, all aircraft), 62.6 hours (Total, this make and model), 10 hours (Pilot In Command, all aircraft), 18.4 hours (Last 90 days, all aircraft), 5.8 hours (Last 30 days, all aircraft), 0.8 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	ROBINSON HELICOPTER COMPANY	**Registration:**	N227WM
Model/Series:	R22	**Aircraft Category:**	Helicopter
Year of Manufacture:	2007	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	4172
Landing Gear Type:	Skid	**Seats:**	2
Date/Type of Last Inspection:	April 15, 2023 Annual	**Certified Max Gross Wt.:**	1370 lbs
Time Since Last Inspection:	16 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	4416 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Not installed	**Engine Model/Series:**	O-360-J2A
Registered Owner:	Utah Helicopter	**Rated Power:**	145 Horsepower
Operator:	Utah Helicopter	**Operating Certificate(s) Held:**	Pilot school (141)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KPVU,4497 ft msl	**Distance from Accident Site:**	5 Nautical Miles
Observation Time:	10:56 Local	**Direction from Accident Site:**	330°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:		**Turbulence Severity Forecast/Actual:**	N/A /
Altimeter Setting:	30.35 inches Hg	**Temperature/Dew Point:**	15°C / 7°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Spanish Fork, UT (KSPK)	**Type of Flight Plan Filed:**	None
Destination:	Spanish Fork, UT (KSPK)	**Type of Clearance:**	None
Departure Time:	10:30 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	40.07911,-111.86675(est)

Administrative Information

Investigator In Charge (IIC):	Nepomuceno, Eleazar
Additional Participating Persons:	Suzanne Braund; FAA; Salt Lake City, UT
Original Publish Date:	April 4, 2024
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=174533