Aviation Investigation Final Report

Location:	Hamilton, Montana	**Accident Number:**	ANC15LA076
Date & Time:	May 4, 2015, 10:45 Local	**Registration:**	N504WD
Aircraft:	Airbus AS-350	**Aircraft Damage:**	Substantial
Defining Event:	Attempted remediation/recovery	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The flight instructor, in the left seat reported that he was providing flight instruction to the commercial pilot, in the right seat, which included a series of hovering autorotations. According to the instructor, as the commercial pilot hovered the helicopter about 3 or 4 ft above the ground, the instructor initiated the hovering autorotation by reducing the floor-mounted throttle (fuel flow control lever) to about 70% N1, and the helicopter descended to about 1 ft above the ground. As the commercial pilot tried to cushion the touchdown, he inadvertently applied too much collective pitch, and the helicopter ballooned to a higher altitude. During the second descent, the main rotor rpm continued to decay, and the helicopter's skids struck the ground. The instructor did not take control of the helicopter during this sequence. A postflight inspection revealed substantial damage to the tailboom.

Probable Cause and Findings

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

The pilot's excessive collective application during an autorotation. Contributing to the accident was the flight instructor's inadequate supervision of the training flight.

Findings

Aircraft	Main rotor control - Incorrect use/operation
Personnel issues	Use of equip/system - Pilot
Personnel issues	Monitoring other person - Instructor/check pilot

Factual Information

History of Flight

Autorotation	Abrupt maneuver
Autorotation	Attempted remediation/recovery (Defining event)
Autorotation	Hard landing

On May 4, 2015, about 1045 mountain daylight time, an Airbus AS-350 BA helicopter, N504WD, sustained substantial damage as a result of a hard landing during a practice hovering autorotation at the Ravalli County Airport in Hamilton, Montana. The helicopter was being operated as a visual flight rules local area proficiency/instructional flight under Title 14 *Code of Federal Regulations* Part 91 when the accident occurred. The helicopter was registered to Hat Creek Helicopters LLC, Hamilton, Montana. The flight instructor and commercial pilot were not injured. Visual meteorological conditions prevailed at the time of the accident and no flight plan was filed. The flight originated from the Ravalli County Airport.

In the flight instructor's written statement, dated June 1, 2015, he reported that the purpose of the flight was to provide flight instruction to the commercial pilot, which included hovering autorotations. The flight instructor related that before starting the first hovering autorotation maneuver, he had the pilot hover the helicopter about 3 or 4 ft above the ground. The flight instructor then initiated the hovering autorotation by reducing the floor-mounted throttle (fuel flow control lever) to about 70% N1, and the helicopter descended to about 1 ft above the ground. He said that as the pilot tried to cushion the touchdown, he inadvertently applied too much collective pitch, and the helicopter ballooned to a higher altitude. The main rotor rpm decayed as the helicopter descended, and the skids subsequently struck the ground hard. The flight instructor characterized the landing as "firm" but both pilots were unaware of any damage sustained to the helicopter. The flight instructor reported that they performed several additional training maneuvers and then landed without further incident. A postflight inspection revealed substantial damage to the tailboom.

The flight instructor reported that it was difficult to control the throttle due to its location, mounted on the pedestal between the front seats, necessitating the release of either the cyclic or collective control to manipulate the throttle. Further, not having an idle detent made the pilot/instructor vulnerable to inadvertently shutting down the engine while trying to manipulate the throttle for training or emergency purposes.

The flight instructor verified that there were no preimpact mechanical failures or malfunctions with the airframe or engine that would have precluded normal operation.

Pilot Information

Certificate:	Commercial; Private	**Age:**	35,Male
Airplane Rating(s):	Single-engine land; Single-engine sea	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	4-point
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	March 5, 2013
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	August 19, 2014
Flight Time:	(Estimated) 570.5 hours (Total, all aircraft), 201.6 hours (Total, this make and model), 416.2 hours (Pilot In Command, all aircraft), 27 hours (Last 90 days, all aircraft)		

Flight instructor Information

Certificate:	Airline transport; Flight engineer; Flight instructor	**Age:**	66,Male
Airplane Rating(s):	Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	4-point
Instrument Rating(s):	Airplane; Helicopter	**Second Pilot Present:**	Yes
Instructor Rating(s):	Helicopter	**Toxicology Performed:**	No
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	March 16, 2015
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	July 10, 2014
Flight Time:	(Estimated) 18000 hours (Total, all aircraft), 500 hours (Total, this make and model), 10000 hours (Pilot In Command, all aircraft), 107 hours (Last 90 days, all aircraft), 24 hours (Last 30 days, all aircraft), 0.3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Airbus	**Registration:**	N504WD
Model/Series:	AS-350 BA	**Aircraft Category:**	Helicopter
Year of Manufacture:	1984	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	1800
Landing Gear Type:	Skid	**Seats:**	6
Date/Type of Last Inspection:	February 10, 2015 AAIP	**Certified Max Gross Wt.:**	4630 lbs
Time Since Last Inspection:	31 Hrs	**Engines:**	1 Turbo shaft
Airframe Total Time:	5696.9 Hrs at time of accident	**Engine Manufacturer:**	Turbomeca
ELT:	C126 installed, not activated	**Engine Model/Series:**	Arriel 1B
Registered Owner:	On file	**Rated Power:**	440 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:	KMSO,3189 ft msl	**Distance from Accident Site:**	40 Nautical Miles
Observation Time:	16:53 Local	**Direction from Accident Site:**	2°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/ N/A
Altimeter Setting:	29.95 inches Hg	**Temperature/Dew Point:**	11°C / -2°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	HAMILTON, MT (6S5)	**Type of Flight Plan Filed:**	None
Destination:	HAMILTON, MT (6S5)	**Type of Clearance:**	None
Departure Time:	10:45 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	RAVALLI COUNTY 6S5	**Runway Surface Type:**	Grass/turf
Airport Elevation:	3642 ft msl	**Runway Surface Condition:**	Dry
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Simulated forced landing

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	46.251667,-114.12555(est)

Administrative Information

Investigator In Charge (IIC):	Johnson, Clinton
Additional Participating Persons:	Troy A Meskimen; FAA Helena FSDO; Helena, MT Xavier de Gastines; Bureau d'Enquetes et d'Analyses; Paris
Original Publish Date:	May 5, 2021
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=91217