Aviation Investigation Final Report

Location:	Englewood, Colorado	**Accident Number:**	DEN05CA052
Date & Time:	January 29, 2005, 11:35 Local	**Registration:**	N9688F
Aircraft:	Hughes 269C	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The instructor and student pilot were practicing autorotations. The instructor demonstrated a "360 degree autorotation" and returned to an altitude of 600 feet agl. The student then executed the same maneuver. After he had turned approximately 270 degrees, the instructor noticed that the airspeed had dropped to 40 knots and a high rate of descent had developed. The instructor applied power and attempted to arrest the descent, but the helicopter made a hard landing on the right skid. The skid collapsed, all three rotor blade tips were bent, and the right side of the airframe was damaged as a result of the ground strike.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the student pilot's failure to maintain control of the helicopter and the instructor's inadequate supervision of the flight. Contributing factors were low rotor rpm, low airspeed, and the instructor's delay in taking remedial action.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: MANEUVERING - TURN TO REVERSE DIRECTION

Findings
1. EMERGENCY PROCEDURE - SIMULATED
2. AUTOROTATION - INITIATED - PILOT IN COMMAND

3. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
4. (F) ROTOR RPM - LOW
5. (F) AIRSPEED - LOW
6. TERRAIN CONDITION - GROUND
7. (C) SUPERVISION - INADEQUATE - PILOT IN COMMAND(CFI)

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
8. (F) REMEDIAL ACTION - DELAYED - PILOT IN COMMAND(CFI)

Occurrence #3: GEAR COLLAPSED
Phase of Operation: DESCENT - UNCONTROLLED

Factual Information

On January 29, 2005, approximately 1135 mountain standard time, a Hughes 269C helicopter, N9688F, piloted by a commercial certificated flight instructor, was substantially damaged when it made a hard landing at Centennial Airport (APA), Englewood, Colorado. Visual meteorological conditions prevailed at the time of the accident. The local instructional flight was being conducted under the provisions of Title 14 CFR Part 91 without a flight plan. The flight instructor and student pilot reported no injuries. The flight originated at Centennial Airport approximately 1040.

The following is based on a telephone interview with, and written statement from, the flight instructor: The instructor and his student were practicing autorotations. The instructor demonstrated a "360 degree autorotation" to the student from an altitude of 600 feet agl with a power recovery. He then returned to an altitude of 600 feet agl, where he, "rolled off the throttle to initiate the maneuver [for the student]." The student lowered the collective and began a right turn. As he was completing the first 180 degrees of turn, the instructor noticed that the "rotor rpm was at the top of the green arc, so [he] applied collective to maintain rotor rpm." Approximately 270 degrees into the turn, rotor rpm had decayed and the instructor lowered the collective in an attempt to maintain rotor rpm. He then noticed that the airspeed had dropped to 40 knots and a high rate of descent had developed. The instructor applied power, then, rolled out of the turn and leveled the aircraft for a run-on landing. The instructor could not arrest the descent rate, and the helicopter touched down on the right skid. The skid collapsed and the helicopter skidded to a stop. All three main rotor blade tips were bent and the airframe was damaged on the right side as a result of the ground strike.

Flight instructor Information

Certificate:	Commercial; Flight instructor	**Age:**	39,Male
Airplane Rating(s):	None	**Seat Occupied:**	
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	
Instructor Rating(s):		**Toxicology Performed:**	No
Medical Certification:	Class 2	**Last FAA Medical Exam:**	April 27, 2004
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:	725 hours (Total, all aircraft), 179 hours (Total, this make and model), 35 hours (Last 90 days, all aircraft), 13 hours (Last 30 days, all aircraft)		

Pilot Information

Certificate:		**Age:**	
Airplane Rating(s):		**Seat Occupied:**	
Other Aircraft Rating(s):		**Restraint Used:**	
Instrument Rating(s):		**Second Pilot Present:**	
Instructor Rating(s):		**Toxicology Performed:**	No
Medical Certification:		**Last FAA Medical Exam:**	
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	Hughes	**Registration:**	N9688F
Model/Series:	269C	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	320133
Landing Gear Type:	Skid	**Seats:**	
Date/Type of Last Inspection:		**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Lycoming
ELT:		**Engine Model/Series:**	H10-360-DIA
Registered Owner:	Mile High Helicopter Company	**Rated Power:**	
Operator:	Mile High Helicopter Company	**Operating Certificate(s) Held:**	None
Operator Does Business As:	Mile High Helicopter Company	**Operator Designator Code:**	W80A

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	APA	**Distance from Accident Site:**	
Observation Time:	11:53 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Few / 4000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Overcast / 8000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	110°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.07 inches Hg	**Temperature/Dew Point:**	5°C / -1°C
Precipitation and Obscuration:			
Departure Point:	Englewood, CO (APA)	**Type of Flight Plan Filed:**	None
Destination:	Englewood, CO (APA)	**Type of Clearance:**	None
Departure Time:	10:40 Local	**Type of Airspace:**	Class B

Airport Information

Airport:	Centennial Airport APA	**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	
Total Injuries:	2 None	**Latitude, Longitude:**	39.569999,-104.849166

Administrative Information

Investigator In Charge (IIC):	Scott, Arnold
Additional Participating Persons:	Gregory M Zadar; Denver, Colorado
Original Publish Date:	April 28, 2005
Last Revision Date:	
Investigation Class:	Class
Note:	This accident report documents the factual circumstances of this accident as described to the NTSB.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=60930