Aviation Investigation Final Report

Location:	PARKMAN, Wyoming	**Accident Number:**	DEN99LA092
Date & Time:	June 1, 1999, 11:00 Local	**Registration:**	N7052L
Aircraft:	Hughes 269A	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

An hour after landing in an open field (6,200 feet msl) near Parkman, Wyoming, in the Bighorn National Forest, the pilot performed a practice takeoff without his passenger to test the aircraft's performance. The helicopter hovered normally after effective translational lift was achieved, and he climbed out at 40 knots. Shortly after clearing a 75-foot ridge 100 to 150 yards from the takeoff field just after coming out of ground effect, the aircraft experienced a downdraft and subsequently began to lose altitude. The power required for the helicopter to climb was greater than the power available. The aircraft impacted the ground through 60 to 80 feet of trees, and came to rest in an inverted position. According to the pilot, there were no mechanical problems and the engine was running on impact. Density altitude at the time of the accident was calculated to be 7,578 feet. According to calculated weight and performance data, the gross weight of the aircraft at the time of departure was approximately 1,232 lbs. At an indicated airspeed of 35 knots, the maximum obstacle clearance height was calculated to be 75 feet, with a maximum distance of 800 feet.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's inadequate in-flight planning by exceeding the helicopter's performance climb capability. Factors were the downdraft encountered during initial climb following takeoff, and the high density altitude.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (C) IN-FLIGHT PLANNING/DECISION - INADEQUATE - PILOT IN COMMAND
2. (C) AIRCRAFT PERFORMANCE,CLIMB CAPABILITY - EXCEEDED
3. (F) WEATHER CONDITION - DOWNDRAFT
4. (F) WEATHER CONDITION - HIGH DENSITY ALTITUDE
5. TERRAIN CONDITION - MOUNTAINOUS/HILLY

Factual Information

On June 1, 1999, approximately 1100 mountain daylight time, a Hughes 269A helicopter, N7052L, owned and operated by the pilot, was substantially damaged after colliding with terrain during initial climb following takeoff from a field near Parkman, Wyoming. The airline transport rated pilot, the sole occupant aboard, sustained minor injuries. The aircraft was being operated under Title 14 CFR Part 91, and no flight plan had been filed for the flight to Laurel, Montana. Visual meteorological conditions prevailed.

According to the pilot, he departed Laurel at 0900 to check out a camp in the Bighorn National Forest. He stated that he was concerned with the aircraft's performance, but had flown at similar altitudes with cooler temperatures. With his passenger aboard, he performed an out of ground effect hover at 60 feet above ground level (agl). The field's elevation was 7,200 mean sea level (msl). He stated that the aircraft hovered with maximum available power at 2,900 rpm. He entered forward flight and attempted to land in a open field at an elevation of 6,200 feet msl. He aborted his first landing due to downdrafts, and his second attempt was successful.

During departure from the field, he elected to perform a practice takeoff without his passenger to test the aircraft's performance. The helicopter flew normally after effective translational lift (ETL) was achieved, and he climbed out at Vy (40 knots), the aircraft's best rate of climb speed. Shortly after clearing a 75-foot ridge 100 to 150 yards from the takeoff field just after coming out of ground effect, the aircraft encountered a downdraft and subsequently began to lose altitude. The power required for the helicopter to climb was greater than the power available. The pilot banked the aircraft to the right to avoid two tall trees. The helicopter impacted the ground through 60 to 80 feet of trees, and came to rest in an inverted position. The pilot stated that there were no mechanical problems, and that the engine was running on impact.

The pilot performed an upwind takeoff, and the wind was from 045 degrees at 5 knots, gusting to 15 knots. Density altitude at the time of the accident was calculated to be 7,578 feet. According to calculated weight and performance data, the gross weight of the aircraft at the time of departure was approximately 1,232 lbs. With a maximum takeoff of 2,900 rpm, the maximum available horsepower was 132, and a maximum manifold pressure of 22.2 inches Hg. At an indicated airspeed of 35 knots, the maximum obstacle clearance height was calculated to be 75 feet, with a maximum distance of 800 feet.

Pilot Information

Certificate:	Airline transport; Commercial; Flight instructor	**Age:**	44,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Helicopter; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	February 12, 1999
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	12600 hours (Total, all aircraft), 200 hours (Total, this make and model), 11750 hours (Pilot In Command, all aircraft), 100 hours (Last 90 days, all aircraft), 50 hours (Last 30 days, all aircraft), 7 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Hughes	**Registration:**	N7052L
Model/Series:	269A 269A	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	980962
Landing Gear Type:	Skid	**Seats:**	2
Date/Type of Last Inspection:	100 hour	**Certified Max Gross Wt.:**	1670 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	HIO-360-B1A
Registered Owner:	KENT W. POTTER	**Rated Power:**	180 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:	Scattered / 5000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots / 15 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	45°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	13°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(NONE)	**Type of Flight Plan Filed:**	None
Destination:	LAUREL , MT (6S8)	**Type of Clearance:**	None
Departure Time:	10:55 Local	**Type of Airspace:**	Class G

Airport Information

Airport:		**Runway Surface Type:**	
Airport Elevation:	6200 ft msl	**Runway Surface Condition:**	
Runway Used:	0	**IFR Approach:**	
Runway Length/Width:		**VFR Approach/Landing:**	

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor	**Latitude, Longitude:**	44.960178,-107.310691(est)

Administrative Information

Investigator In Charge (IIC):	Scott, B. beach
Additional Participating Persons:	OWEN R JONES; CASPER , WY
Original Publish Date:	March 31, 2000
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=46417