



# Aviation Investigation Final Report

<b>Location:</b>	TOWNSEND, Montana	<b>Accident Number:</b>	DEN83LA154
<b>Date &amp; Time:</b>	June 30, 1983, 09:40 Local	<b>Registration:</b>	N1334X
<b>Aircraft:</b>	BELL 47G-3B-1 SOLOY	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	1 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

## Analysis

THE HELICOPTER MADE A HARD TOUCHDOWN DURING AN AUTOROTATIVE FORCED LANDING AFTER THE ENGINE QUIT. DURING THE LANDING THE MAIN ROTOR SEVERED THE TAIL BOOM. THE PILOT STRETCHED THE AUTOROTATIONAL GLIDE TO REACH A HAY FIELD AND LOST MAIN ROTOR RPM IN THE PROCESS. THE ENGINE DIED OF FUEL STARVATION BECAUSE OF A LOW FUEL STATE AND BECAUSE THE PILOT WAS DESCENDING AT HIGH SPEED WITH NOSE LOW. IN THIS ACFT ACCORDING TO A TEST PILOT WHO SPECIALIZES IN THIS MODEL CAUTION MUST BE USED TO AVOID UNUSUAL PITCH ATTITUDES WITH A LOW FUEL STATE. THE PILOT SAID HE HAD A 30 DEGREE NOSE LOW ATTITUDE. THE FUEL TANKS ARE SLANTED 10 DEGREES AFT TO COMPENSATE FOR A 7 DEGREE NOSE LOW ATTITUDE IN NORMAL HIGH SPEED (80 MPH) CRUISE. THE PILOT SAID THE GAUGES SHOWED ABOUT 10 GALLONS JUST BEFORE THE ENGINE QUIT. HE ALSO STATED THAT HE FELT STARVATION OCCURRED.

## Probable Cause and Findings

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

### Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL  
Phase of Operation: DESCENT - EMERGENCY

Findings

1. (F) FLUID,FUEL - STARVATION
2. (C) PERFORMANCE DATA - NOT IDENTIFIED - PILOT IN COMMAND
3. (F) FLUID,FUEL - LOW LEVEL
4. (C) MANEUVER - EXCESSIVE - PILOT IN COMMAND

-----

Occurrence #2: FORCED LANDING

Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings

5. (F) AUTOROTATION - PERFORMED - PILOT IN COMMAND
6. (F) ADEQUATE ROTOR RPM - NOT MAINTAINED - PILOT IN COMMAND

-----

Occurrence #3: HARD LANDING

Phase of Operation: LANDING - FLARE/TOUCHDOWN

## Factual Information

### Pilot Information

<b>Certificate:</b>	Commercial; Flight instructor	<b>Age:</b>	36, Male
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	Helicopter	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	None	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	Helicopter	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 2 Valid Medical--no waivers/lim.	<b>Last FAA Medical Exam:</b>	March 15, 1983
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	10260 hours (Total, all aircraft), 1100 hours (Total, this make and model), 10260 hours (Pilot In Command, all aircraft), 350 hours (Last 90 days, all aircraft), 7 hours (Last 24 hours, all aircraft)		

### Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	BELL	<b>Registration:</b>	N1334X
<b>Model/Series:</b>	47G-3B-1 SOLOY 47G-3B-1 S	<b>Aircraft Category:</b>	Helicopter
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	6555
<b>Landing Gear Type:</b>	Skid	<b>Seats:</b>	3
<b>Date/Type of Last Inspection:</b>	March 15, 1983 100 hour	<b>Certified Max Gross Wt.:</b>	2950 lbs
<b>Time Since Last Inspection:</b>	22 Hrs	<b>Engines:</b>	1 Turbo shaft
<b>Airframe Total Time:</b>		<b>Engine Manufacturer:</b>	ALLISON
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	250-C20
<b>Registered Owner:</b>	BLAIN SALES, INC.	<b>Rated Power:</b>	400 Horsepower
<b>Operator:</b>	BEAR TOOTH HELICOPTERS	<b>Operating Certificate(s) Held:</b>	On-demand air taxi (135)
<b>Operator Does Business As:</b>		<b>Operator Designator Code:</b>	

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>		<b>Distance from Accident Site:</b>	
<b>Observation Time:</b>		<b>Direction from Accident Site:</b>	
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	30 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	/	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	0°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>		<b>Temperature/Dew Point:</b>	27°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	E. OF TOWNSEND , MT	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	TOWNSEND , MT	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	00:00 Local	<b>Type of Airspace:</b>	Class G

## Airport Information

<b>Airport:</b>		<b>Runway Surface Type:</b>	Grass/turf
<b>Airport Elevation:</b>		<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>	0	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>		<b>VFR Approach/Landing:</b>	Forced landing

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 None	<b>Latitude, Longitude:</b>	46.480636,-111.340736(est)

## Administrative Information

**Investigator In Charge (IIC):**      Winningham, Fred

**Additional Participating  
Persons:**

**Original Publish Date:**

**Last Revision Date:**

**Investigation Class:**            [Class](#)

**Note:**

**Investigation Docket:**          <https://data.nts.gov/Docket?ProjectID=16105>

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](#).