



National Transportation Safety Board Aviation Accident Final Report

Location:	Dorrance, PA	Accident Number:	ERA10CA001
Date & Time:	10/02/2009, 1025 EDT	Registration:	N74004
Aircraft:	BELL 47D1	Aircraft Damage:	Substantial
Defining Event:	Fuel exhaustion	Injuries:	1 None
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot reported that he performed a preflight inspection of his helicopter "including checking fuel tank was full and without water or other contaminants." The cross country flight was estimated to be one hour and forty-five minutes. Based upon past performance and lack of guidance from the manufacturer, he determined that the helicopter consumed about 13 gallons-per-hour, resulting in a total consumption of 22.8 gallons of fuel, which would leave approximately 6 gallons remaining in the 29-gallon fuel system. After one hour and twenty five minutes of flight time and approximately 5 nautical miles from the destination airport, the engine quit suddenly. The pilot performed an autorotation maneuver; however, the tail boom impacted a dirt and stone pile causing substantial damage to the tail boom. Post accident examination by a Federal Aviation Administration inspector revealed that "the fuel tank was empty" and a "small amount of fuel was found in both the carburetor and the gascolator." Samples from both were verified to be free of water or contaminants. A slight indication of blue fuel stain was found at the fitting for the fuel line which connects the fuel tank and the carburetor. Additional inspection and testing was performed by the helicopter's Airframe and Powerplant maintenance technician twelve days after the accident in an effort to determine the origin of the fuel leak; however, the results were inconclusive. Fuel stains were noted on the carburetor around the split line of the two body halves, and around the fuel strainer screen on the left side.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A total loss of engine power due to fuel exhaustion for undetermined reasons.

Findings

Aircraft	Fuel - Fluid level (Cause)
Not determined	Not determined - Unknown/Not determined (Cause)

Factual Information

History of Flight

Enroute-descent	Fuel exhaustion (Defining event)
Emergency descent	Off-field or emergency landing
Autorotation	Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Commercial	Age:	54, Male
Airplane Rating(s):	None	Seat Occupied:	Left
Other Aircraft Rating(s):	Helicopter	Restraint Used:	Seatbelt
Instrument Rating(s):	None	Second Pilot Present:	
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Without Waivers/Limitations	Last Medical Exam:	08/18/2009
Occupational Pilot:	No	Last Flight Review or Equivalent:	08/14/2009
Flight Time:	387 hours (Total, all aircraft), 316 hours (Total, this make and model), 343 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	BELL	Registration:	N74004
Model/Series:	47D1	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	403
Landing Gear Type:	Skid	Seats:	3
Date/Type of Last Inspection:	06/09/2009, Annual	Certified Max Gross Wt.:	2350 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	9389 Hours	Engine Manufacturer:	FRANKLIN
ELT:	Not installed	Engine Model/Series:	6V4 SERIES
Registered Owner:	HOUSE GUY C	Rated Power:	210 hp
Operator:	HOUSE GUY C	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Observation Facility, Elevation:	kavp, 962 ft msl	Observation Time:	1054 EDT
Distance from Accident Site:	20 Nautical Miles	Condition of Light:	Day
Direction from Accident Site:	50°	Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Scattered / 7500 ft agl	Temperature/Dew Point:	10°C / 6°C
Lowest Ceiling:	None	Visibility	10 Miles
Wind Speed/Gusts, Direction:	3 knots, 10°	Visibility (RVR):	
Altimeter Setting:	29.98 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Castle Creek, NY	Type of Flight Plan Filed:	None
Destination:	Hazleton, PA (KHZL)	Type of Clearance:	None
Departure Time:	0900 EDT	Type of Airspace:	Class G

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None		

Administrative Information

Investigator In Charge (IIC):	Shawn Etcher	Adopted Date:	03/03/2010
Additional Participating Persons:	William Rush; FAA/FSDO; Allentown, PA		
Publish Date:	03/03/2010		
Note:	This accident report documents the factual circumstances of this accident as described to the NTSB.		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=74840		

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