



National Transportation Safety Board Aviation Accident Final Report

Location:	Bentley, IL	Accident Number:	CEN18LA260
Date & Time:	07/06/2018, 1715 CDT	Registration:	N224KM
Aircraft:	Bell 206	Aircraft Damage:	Substantial
Defining Event:	Fuel starvation	Injuries:	1 None
Flight Conducted Under:	Part 137: Agricultural		

Analysis

The commercial helicopter pilot indicated that, about 10 minutes after takeoff, while making a turn during an aerial application flight, he noticed the low fuel pressure light illuminate; the fuel pressure gage indicated 0 psi, and the fuel quantity gage indicated 15 gallons. The engine subsequently lost total power, and the pilot performed an autorotation in preparation for a forced landing, during which the helicopter nosed over and sustained damage to the main and tail rotors.

Postaccident examination of the helicopter revealed that the fuel quantity gage read 4 gallons, and the fuel tank contained about 9.5 gallons of fuel. Both fuel boost pumps tested normally. Examination of the airframe and engine revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation.

The helicopter's flight manual stated to land as soon as practical when fuel quantity was less than 20 gallons and contained a warning that uncoordinated turns and maneuvers were to be avoided with a fuel quantity of less than 20 gallons. The manual also stated that, due to possible fuel sloshing in unusual attitudes or out-of-trim conditions and one or both fuel boost pumps inoperative, the unusable fuel was 10 gallons.

The turn during spray operations with less than 20 gallons of fuel likely caused the fuel to unport, allowing air into the fuel line. This resulted in a total loss of engine power due to fuel starvation. The pilot did not ensure that adequate fuel was on board for the maneuvering flight.

Probable Cause and Findings

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

The pilot's failure to ensure that adequate fuel was on board for the maneuvering flight, which resulted in a total loss of engine power due to fuel starvation.

Findings

Aircraft	Fuel system - Incorrect use/operation (Cause) Fuel - Fluid level (Cause)
Personnel issues	Decision making/judgment - Pilot (Cause)

Factual Information

On July 6, 2018, about 1715 central daylight time, a Bell 206B helicopter, N224KM, was substantially damaged during a forced landing near Bentley, Illinois. The pilot was not injured. The helicopter was registered to and operated by Woodley Aerial Leasing LLC under the provisions of Title 14 *Code of Federal Regulations* Part 137 as an aerial application flight. Day visual meteorological conditions prevailed for the local flight, which departed about 1705 from a load truck near Bentley, Illinois.

According to the pilot, he departed the load truck and flew about 1.5 miles east to an application area. While making a turn, he noticed the low fuel pressure light illuminate. After initiating a climb, he noticed the fuel quantity gage indicated 15 gallons and the fuel pressure gage indicated zero psi. The pilot initiated an autorotation in preparation for a forced landing. During touchdown, the helicopter nosed over, which damaged the main and tail rotors.

Examination of the helicopter revealed the fuel quantity gage read about 4 gallons. About 1.5 quarts of fuel were drained from the airframe and filter sumps, with no anomalies observed. The fuel valve switch was found in the on position. The forward and aft fuel boost pumps were tested individually, with normal pressures observed. The fuel tank was drained, revealing that about 9.5 gallons of total fuel were present in the tank. Examination of the airframe and engine revealed no evidence of mechanical malfunctions or failures that would have precluded normal flight operations.

The helicopter's flight manual stated to land as soon as practical when fuel quantity was less than 20 gallons. The flight manual contained a warning that uncoordinated turns and maneuvers were to be avoided with a fuel quantity of less than 20 gallons and also stated that due to possible fuel sloshing in unusual attitudes or out of trim conditions and one or both fuel boost pumps inoperative, unusable fuel was 10 gallons.

History of Flight

Maneuvering-low-alt flying	Fuel starvation (Defining event)
Autorotation	Hard landing

Pilot Information

Certificate:	Flight Instructor; Commercial	Age:	31, Male
Airplane Rating(s):	None	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	Helicopter	Second Pilot Present:	No
Instructor Rating(s):	Helicopter	Toxicology Performed:	No
Medical Certification:	Class 2 Without Waivers/Limitations	Last FAA Medical Exam:	01/10/2018
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	11/05/2017
Flight Time:	3286 hours (Total, all aircraft), 977 hours (Total, this make and model), 3126 hours (Pilot In Command, all aircraft), 160 hours (Last 90 days, all aircraft), 80 hours (Last 30 days, all aircraft), 10 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Bell	Registration:	N224KM
Model/Series:	206 B	Aircraft Category:	Helicopter
Year of Manufacture:	1974	Amateur Built:	No
Airworthiness Certificate:	Restricted	Serial Number:	1124
Landing Gear Type:	Skid	Seats:	5
Date/Type of Last Inspection:	10/01/2017, Annual	Certified Max Gross Wt.:	3200 lbs
Time Since Last Inspection:		Engines:	1 Turbo Shaft
Airframe Total Time:	10389 Hours at time of accident	Engine Manufacturer:	Allison
ELT:	Not installed	Engine Model/Series:	250-C20
Registered Owner:	On file	Rated Power:	400 hp
Operator:	On file	Operating Certificate(s) Held:	Agricultural Aircraft (137)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	KEOK, 671 ft msl	Distance from Accident Site:	14 Nautical Miles
Observation Time:	1715 CDT	Direction from Accident Site:	305°
Lowest Cloud Condition:	Few / 4000 ft agl	Visibility	10 Miles
Lowest Ceiling:		Visibility (RVR):	
Wind Speed/Gusts:	7 knots / 12 knots	Turbulence Type Forecast/Actual:	None / None
Wind Direction:	60°	Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	30.3 inches Hg	Temperature/Dew Point:	28° C / 18° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Bentley, IL	Type of Flight Plan Filed:	None
Destination:	Bentley, IL	Type of Clearance:	None
Departure Time:	1705 CDT	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	Latitude, Longitude:	40.330000, -91.180000 (est)

Administrative Information

Investigator In Charge (IIC):	Michael J Folkerts	Report Date:	04/20/2020
Additional Participating Persons:	Stanley Swank; Flight Standards District Office; Springfield, IL		
Publish Date:	04/20/2020		
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=97707		

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