Aviation Investigation Final Report

Location:	St. Michael, Alaska	**Accident Number:**	ANC17CA044
Date & Time:	June 25, 2017, 12:15 Local	**Registration:**	N5955X
Aircraft:	Brantly B2	**Aircraft Damage:**	Substantial
Defining Event:	Fuel contamination	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Aerial observation		

Analysis

The pilot reported that, while in a high-hover profile conducting aerial reindeer herding operations, he decided to make a precautionary landing with the skid-equipped helicopter on "knee-high" tussocks in remote tundra due to several "left yaw movements" followed by an "uncommanded left yaw." The pilot initiated a hovering autorotation from about 15 ft above ground level. During the landing sequence, the left skid assembly was damaged, and the helicopter settled forward and to the left, which resulted in the three main rotor blades impacting the tundra. All three main rotor blades separated midspan due to the impact, and the helicopter sustained substantial damage to the main rotor system and fuselage.

After the accident, the pilot spoke with a witness who heard the engine producing "popping" noises and then "quit." At the time of the accident, the pilot reported he did not realize that the engine had lost power.

Postaccident examination of the airframe and engine by the pilot revealed no preimpact mechanical malfunctions that would have precluded normal operation. While inspecting the fuel cell, the pilot found 1/8 of a cup of water with about 5 gallons of fuel remaining.

During the aerial herding operations, the helicopter was shut down for refueling several times throughout the day, and no hot refueling operations were conducted. The pilot spoke with some local community members who were assisting him on the day of the aerial herding operations. The pilot found that, when the helicopter was last refueled before the accident flight and when the fuel was transferred from a steel drum with a pump system to a plastic jug for pouring in the helicopter, a water separating filter/funnel was not used by one of the local community members who was assisting the pilot with the refueling operations. The individual misunderstood the refueling operations and thought that the fuel filtering process would take place as the fuel was poured directly into the helicopter. Water was subsequently found in the steel drum that was used. The pilot reported that he conducted a preflight check of the helicopter's fuel cell (sump) before the accident flight, and no fuel discrepancies were observed at the time.

The Federal Aviation Administration published Advisory Circular 20-125, "Water in Aviation Fuels," which discussed the potential hazards of water in aviation fuels and stated, in part:

The pilot in command has the final responsibility to determine that the aircraft is properly serviced. The pilot in command should also be present during the refueling operation to inspect a sample of the fuel from the dispensing unit prior to fueling the aircraft.

Refueling from drum storage or cans should be considered as an unsatisfactory operation and one to be avoided whenever possible. All containers of this type should be regarded with suspicion and the contents carefully inspected, identified, and checked for water and other contamination.

Probable Cause and Findings

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

The pilot's inadequate supervision of the refueling process, which resulted in a loss of engine power due to water contamination in the helicopter's fuel system from the fuel drum and subsequent impact with terrain.

Findings

Personnel issues	Attention - Pilot
Aircraft	(general) - Incorrect use/operation
Aircraft	Fuel - Fluid condition

Factual Information

History of Flight

Prior to flight	Aircraft servicing event
Maneuvering-hover	Fuel contamination (Defining event)
Autorotation	Attempted remediation/recovery
Maneuvering-hover	Off-field or emergency landing
Landing-flare/touchdown	Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Private	**Age:**	34,Male
Airplane Rating(s):	None	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	Lap only
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 None	**Last FAA Medical Exam:**	November 1, 2015
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	March 8, 2017
Flight Time:	(Estimated) 494.1 hours (Total, all aircraft), 55.4 hours (Total, this make and model), 433.1 hours (Pilot In Command, all aircraft), 15 hours (Last 90 days, all aircraft), 7 hours (Last 30 days, all aircraft), 7 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Brantly	**Registration:**	N5955X
Model/Series:	B2 B	**Aircraft Category:**	Helicopter
Year of Manufacture:	1961	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	96
Landing Gear Type:	Skid	**Seats:**	2
Date/Type of Last Inspection:	June 28, 2016 Annual	**Certified Max Gross Wt.:**	1670 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	837.5 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Not installed	**Engine Model/Series:**	IVO-360-A1A
Registered Owner:	On file	**Rated Power:**	180 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	PAMK,92 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	19:56 Local	**Direction from Accident Site:**	289°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Overcast / 4800 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	11 knots /	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:	70°	**Turbulence Severity Forecast/Actual:**	/ N/A
Altimeter Setting:	29.95 inches Hg	**Temperature/Dew Point:**	14°C / 8°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	ST MICHAEL, AK (SMK)	**Type of Flight Plan Filed:**	None
Destination:	ST MICHAEL, AK (SMK)	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	63.479721,-162.11(est)

Administrative Information

Investigator In Charge (IIC):	Hodges, Michael
Additional Participating Persons:	Daniel S Foster; FAA Fairbanks FSDO; Fairbanks, AK
Original Publish Date:	May 14, 2018
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=95835