



On-site Summary

AC Model	206B3	Eng Mfg	Rolls-Royce
AC Registration	N211CS	Eng Model	250-C20B
AC Serial No.	2775	Eng Serial No.	CAE-832024
AC Total Time	12092.2	Eng Total Time	12092.2
Orig AC Model	206B3	City	Firebaugh
Mishap Date	Mar 1, 2017	State	CA
Mishap Time	1030L	Country	USA
Flight Phase	Maneuvering	Owner	West Valley Aviation
Damage Est	Substantial	Operator	West Valley Aviation

Narrative:

NTSB Identification: WPR17LA071

IIC: Joshua Cawthra ([REDACTED])

FAA: Fritz Bayer ([REDACTED])

Bell Helicopter: Gary Howe ([REDACTED])

Rolls-Royce: Jon Michael ([REDACTED])

On March 1, 2017, about 1030L Pacific Time, a Bell 206B3, N211CS, was substantially damaged during a forced landing following a loss of engine power near Firebaugh, California. The helicopter was registered to and operated by West Valley Aviation Inc., Five Points, California, under the provisions of Title 14 Code of Federal Regulations Part 137 Agricultural Spraying Operations. The commercial pilot, sole occupant of the helicopter, was not injured. Visual meteorological conditions prevailed and no flight plan was filed for the local aerial application flight, which originated from a nearby staging area about 1 minute prior to the accident. According to the pilot's report, during an agricultural aerial application flight, he was flying about 5 feet over the crop at an airspeed of 70 mph, when he heard a loud bang followed by a loss of engine power. He executed an autorotation and upon touchdown in a freshly plowed soft field, the main rotor blade struck the tailboom and the helicopter came to rest upright. Post-accident examination of the helicopter by the pilot revealed that the tailboom was separated forward of the tail rotor gearbox. The helicopter was recovered to a secure location for further examination.

Fuel System: Fuel was present in the tank upon inspection. Approximately 6.5 gallons of fuel was drained from the tank. The fuel shutoff valve was operational. Forward fuel boost pump was operational and aft fuel boost pump was inoperative. There was an associated FUEL PUMP caution light illuminated when battery power was supplied. Upon further examination it was confirmed that 24 volts was being supplied to the aft pump. The aft fuel boost pump was removed from the aircraft and battery power supplied. The boost pump did not operate during this check. Below is information concerning the FUEL PUMP caution light. The airframe fuel filter was checked with a small amount of particulate matter noted in the fuel filter bowl and the outside of filter element. Fuel filter was not in by-pass.

		WARNING	
			NOTE
FUEL PUMP	One or both fuel boost pumps is inoperative. Descend to below 6000 feet pressure altitude if flight permits. Land as soon as practical.	OPERATION WITH BOTH FUEL BOOST PUMPS INOPERATIVE IS NOT AUTHORIZED. DUE TO POSSIBLE FUEL SLOSHING IN UNUSUAL ATTITUDES OR OUT OF TRIM CONDITIONS AND ONE OR BOTH FUEL BOOST PUMPS INOPERATIVE, THE UNUSABLE FUEL IS TEN GALLONS.	The engine is designed to operate without boost pump pressure under 6000 feet pressure altitude and one boost pump will supply sufficient fuel for normal engine operations under all conditions of power and altitude. Both fuel boost pumps shall be ON for all normal operations.

(BHT-206B3-FM-1 Section 3 – Emergency Procedures)

Hydraulics: No hydraulics issues were suspected. Hydraulic fluid was evident in the system. No pre-existing hydraulic leaks were observed. All lines and hoses were at least hand tight.

Engine Oil Supply System: The engine oil supply system was visually inspected and no pre-impact anomalies were noted. All lines and hoses were at least hand tight.

Power Plant: Rolls-Royce M250-C20B. The engine was examined by a Rolls-Royce Technical Representative.

Main Rotor & Main Rotor Drive System: No pre-impact anomalies were observed with the main rotor assembly or main rotor drive system. Examination of the main rotor blades revealed that both rotor blades exhibited scrapes and gouges near the outboard trim tab consistent with contact with the tailboom. Additionally, there were red paint transfer marks on the leading edges of the main rotor blades (fuselage/tail boom was painted red). The inner and outer ring of the swashplate assembly separated (twisted) exposing the pivot sleeve. This was most likely due to the sudden stoppage when the main rotor blades contacted the tailboom. Main rotor continuity was confirmed by rotating the Forward short shaft (steel tail rotor drive shaft) by hand. Movement was confirmed from the forward short shaft through the transmission to the mast. The transmission was visually inspected and no pre-impact anomalies observed. The chip detectors

were removed and visually inspected with no particulate matter observed. No abnormal sounds were heard when the transmission was rotated by hand.

Tail Rotor & Tail Rotor Drive System: No pre-impact anomalies were observed with the tail rotor assembly or tail rotor drive system. The tail rotor gearbox remained attached to the portion of the severed tailboom assembly. Both tail rotor blades exhibited severe damage due to ground impact. Additional damage to the tail rotor hub assembly came from what appeared to be a strike from a main rotor blade. The hub assembly was rotated by hand with no binding or abnormal sounds in the tail rotor gear box. The tail rotor gearbox separated from the #1 tail rotor drive shaft segment (#1 segment is at the end of the tail boom near the tail rotor gearbox) when the main rotor blade cut through the #1 segment. The drive shaft segments forward of the #1 segment were unremarkable. Tail rotor continuity was established by turning the #2 tail rotor drive shaft segment by hand and observing rotation through the drive shaft segments to the aft short shaft, oil cooler blower shaft and forward short shaft. Oil was evident in the tail rotor gear box. No chips evident on the chip detector.

Flight Controls: No pre-impact anomalies were observed with the flight controls.

Collective control – No issues with movement of the collective. Continuity was confirmed from the collective to the servo actuator and to the collective lever. Left collective stick was removed prior to flight. Movement of the throttle corresponded with the appropriate movement of the Engine FCU pointer.

Cyclic Control - Cyclic control continuity was confirmed through the right-hand cyclic up through the servo actuators to the inner, non-rotating swash plate. Note: control tube just aft of the left side cycle servo actuator was fractured in overload at the threads. Moving control tube by hand provided continuity to the inner, non-rotating swashplate. Left cyclic stick had been removed prior to flight.

Directional Control - Both anti-torque pedals (on the right side of the aircraft) were moved by hand with corresponding movement of the fractured control tube in the tailboom.

Landing Gear: No pre-impact anomalies were observed with the flight controls. No damage was observed to the landing gear from the forced landing.

Fuselage: No pre-impact anomalies were observed with the fuselage. Contact with the cowlings by rotating swashplate components was observed with the shifting of the transmission. The tailboom cut off approximately 30 inches aft of the horizontal stabilizer. No other damage was observed to the fuselage.

Instruments/Electrical/Avionics: A complete examination was not conducted; no issues were suspected.