



CASE FINDINGS

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During the course of the investigation, the following observations were made:

The pilot reported that he ferried the helicopter to the work site. He landed the helicopter on the company “nurse” truck to fuel the helicopter with 7 gallons of fuel (he estimated the added fuel brought the fuel level to 25 gallons) and 80 gallons of pesticide mix. He lifted off the truck at just under maximum allowable torque without any anomalies. He flew the helicopter around the field and surveyed it for hazards. Following the first pass, the pilot added power to perform a turn with a tailwind. At this time, the pilot reported that he heard the engine sounds decrease and saw the Low Rotor RPM light illuminate and its accompanying horn sound. The engine continued to spool down as the pilot attempted to auto rotate the helicopter. During the auto rotation, the helicopter’s skids and spray nozzles contacted trees and resulted in the helicopter pitching nose down. The main rotor blades struck the tail boom and the helicopter settled rapidly to the ground. The pilot sustained minor injuries.

The helicopter was removed and transported to a secure facility for further examination. Due to restrictions from the COVID-19 pandemic, examination of the helicopter did not occur until March 9, 2021. Members of the Federal Aviation Administration, Bell Helicopters, and Roll-Royce Engines participated in the examination. The wreckage had been stored outside and subjected to the elements. Rainwater was found in several areas of the helicopter. The airframe fuel filter was opened and found to contain a mix of fuel and water. A small amount of particulate matter was trapped by the filter element. No other anomalies were detected with the airframe. The engine was visually examined and then removed and transported to Keystone Turbine Services for further examination.

Due to further complications, the engine was not examined until 15 March 2022. Examination of the engine found grey fibrous material trapped in the engine-driven fuel pump/filter. The outer portion of the filter was contaminated with black, non-ferrous, particulate matter while the inside contained a white greasy substance. Fluid did not appear to transfer through the filter. The fuel spray nozzle was fouled with a grey particulate matter. In addition, disassembly of the fuel control unit (FCU) revealed the filter was also found by grey particulate matter along with fibrous material. The FCU was reassembled and tested. Due to the presence of a significant amount of water, the FCU required flushing before testing. Testing of the FCU found it to operate outside of acceptable limits. Despite the airframe being subjected to the elements, the

location of the water and debris in the engine are located in areas where outside contamination cannot normally collect. Therefore, it is likely that the fuel supplied to the engine prior to the accident was contaminated with water and fibrous (likely grass) material.

A review of maintenance logbooks revealed that the helicopter was inspected on January 4, 2019, about 300 hours prior to the accident, using continued airworthiness inspection criteria. Since no evidence of contamination was detected during this inspection, it likely occurred after that date.

It could not be determined if fuel contamination originated at the company fuel truck, or within the helicopter fuel tank.

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