



## **NATIONAL TRANSPORTATION SAFETY BOARD**

Office of Aviation Safety  
Western Pacific Region

DATE February 1, 2022

# **AIRFRAME AND ENGINE EXAMINATION**

**WPR19LA194**

This document contains 7 embedded photos.

## **A. ACCIDENT**

Location: Mosby, MT.  
Date: 07/13/2019  
Aircraft: N3078G / Bell 47G  
NTSB IIC: Fabian Salazar

## **B. EXAMINATION PARTICIPANTS:**

Name: Fabian Salazar  
ASI  
National Transportation Safety Board  
Federal Way, WA 98003

Name: Casey Stevens  
Air Safety Investigator  
Federal Aviation Administrations  
Helena, MT.

Name: Luke Watters  
Air Safety Investigator  
Federal Aviation Administration  
Helena, MT.

Jon Michael  
Air Safety Investigator  
Rolls-Royce Engines  
Indianapolis, Indiana

## **C. SUMMARY**

Examination of the airframe and engine were conducted on July 25, 2019. The IIC did not travel to examine the wreckage. Two members of the Federal Aviation Administration (FAA), and a party member from Rolls-Royce Engines travelled to the operator's hangar and examined the wreckage. Based upon their examination, and a review of provided photographs, no mechanical malfunctions or failures were noted with the airframe that would have precluded normal operation. Further examination and a test run of the engine identified no mechanical malfunctions or failures that would have precluded normal operations.

## **D. DETAILS OF THE INVESTIGATION**

### **Airframe Examination**

The bubble canopy was fractured into multiple pieces and scattered throughout the accident site. The cockpit space was not compromised. The instrument panel remained attached to the cockpit floor and all instruments remained attached to the instrument panel. The instrument panel was displaced to the right. The bench seat remained secured to the cockpit.

The flight controls were mounted on the left-hand side. Flight control continuity was confirmed by the FAA.

The truss frame retained its integrity and exhibited little obvious visible damage. The lower vertical stabilizer was bent to the right. The horizontal elevators remained attached to the tailboom and exhibited minimal damage.

The tail rotor assembly and 90° gearbox separated from the frame at the lower section of the 90° gearbox. The lower section of the gearbox housing remained attached to the top section of the vertical fin. The tail rotor blades remained attached to the hub and were damaged with chord-wise bends and wrinkles to the skin. One tail rotor blade separated about 6 inches from the root of the blade. The other tail rotor blade lost a small section at the tip, that equated to a few inches inboard.

The tail rotor drive shaft remained attached to the top of the tailboom at all hangar bearings, and from the intermediate gearbox to the 90° gearbox lower section. The tail rotor control cables remained attached to the tail rotor assembly.

The right skid fractured at the forward cross tube, and bent inward at the aft cross tube, which allowed the skid to come to rest underneath the fuselage. The left skid separated from the aft cross tube at the saddle and remained attached to the forward strut. The forward strut bent laterally to the left, which allowed the left-side of the fuselage to contact the ground.

The main rotor system separated from the transmission. There were no photographs of the main rotor system provided to the IIC.

The right fuel tank separated from the top of the fuselage. The left fuel tank remained attached to the top of the fuselage.

The engine remained attached to the fuselage at its mounts and exhibited little to no damage. The engine was removed from the frame and shipped to an authorized maintenance facility where it was test ran. According to the party member from Rolls-Royce, the engine started, idled and ran normally during the testing with no flameouts or abnormal operations noted.

## PHOTO EXHIBIT



Figure 1. N3078G, rear-view, showing lower section of the 90° gear box. The tail rotor assembly is partially concealed by the vertical stabilizer. Photo courtesy of first responders.



Figure 2. Right-side view. Photo courtesy of first responders.



Figure 3. Front view. Photo courtesy of first responders.



Figure 4. Left-side view. Photo courtesy of first responders.

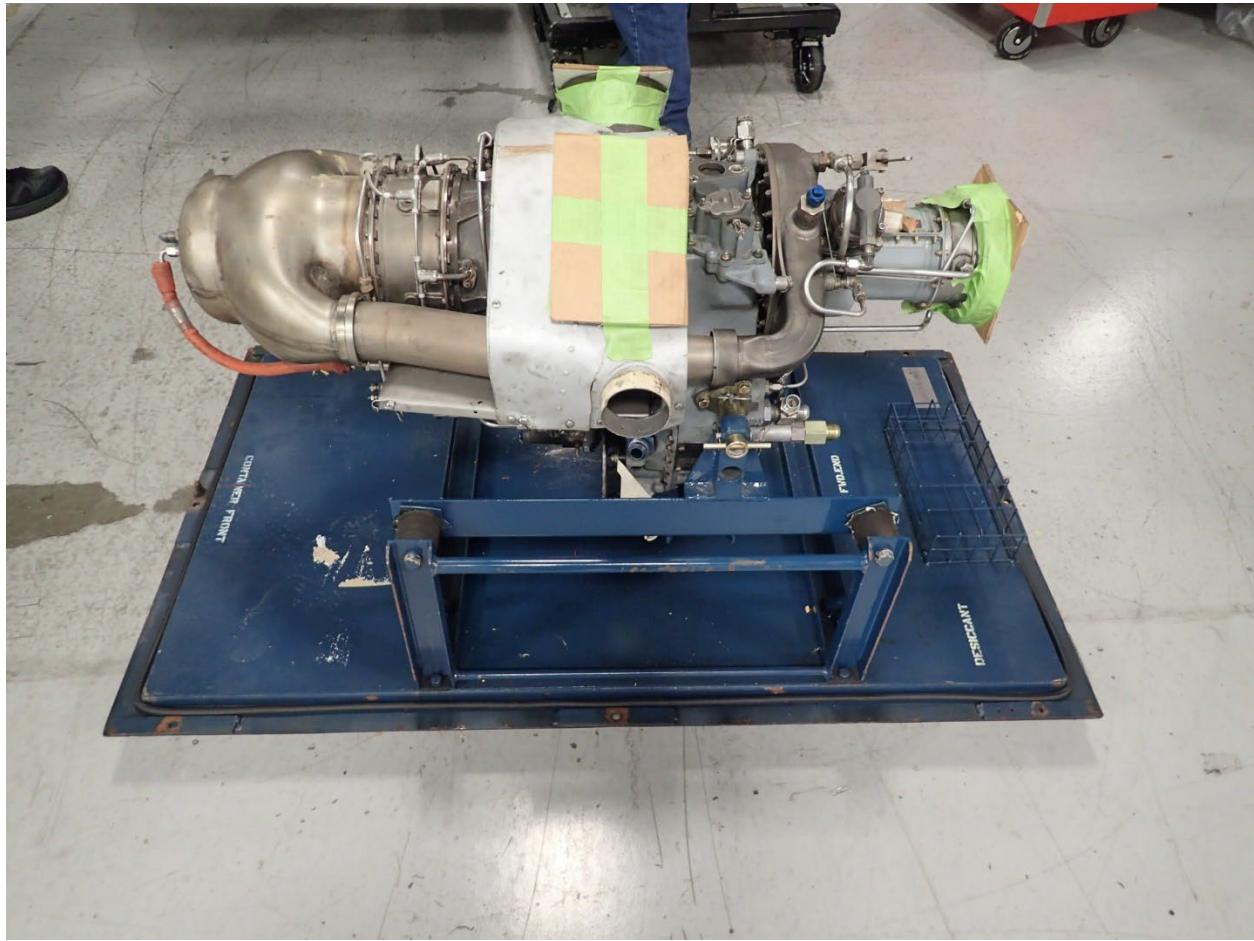


Figure 5. Right-side view of the engine.

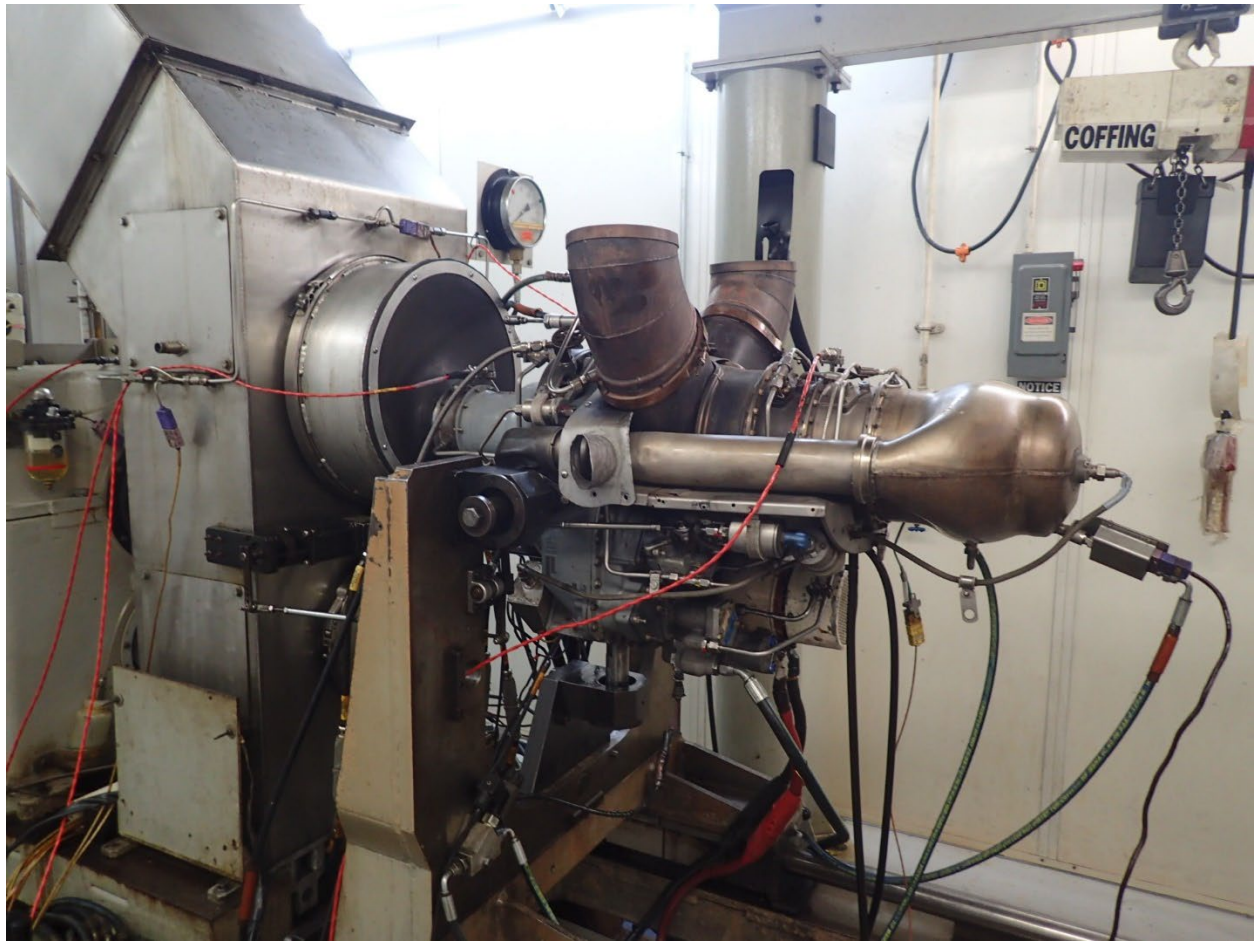


Figure 6. Engine mounted in the test-run cell. Photo courtesy of Rolls-Royce.

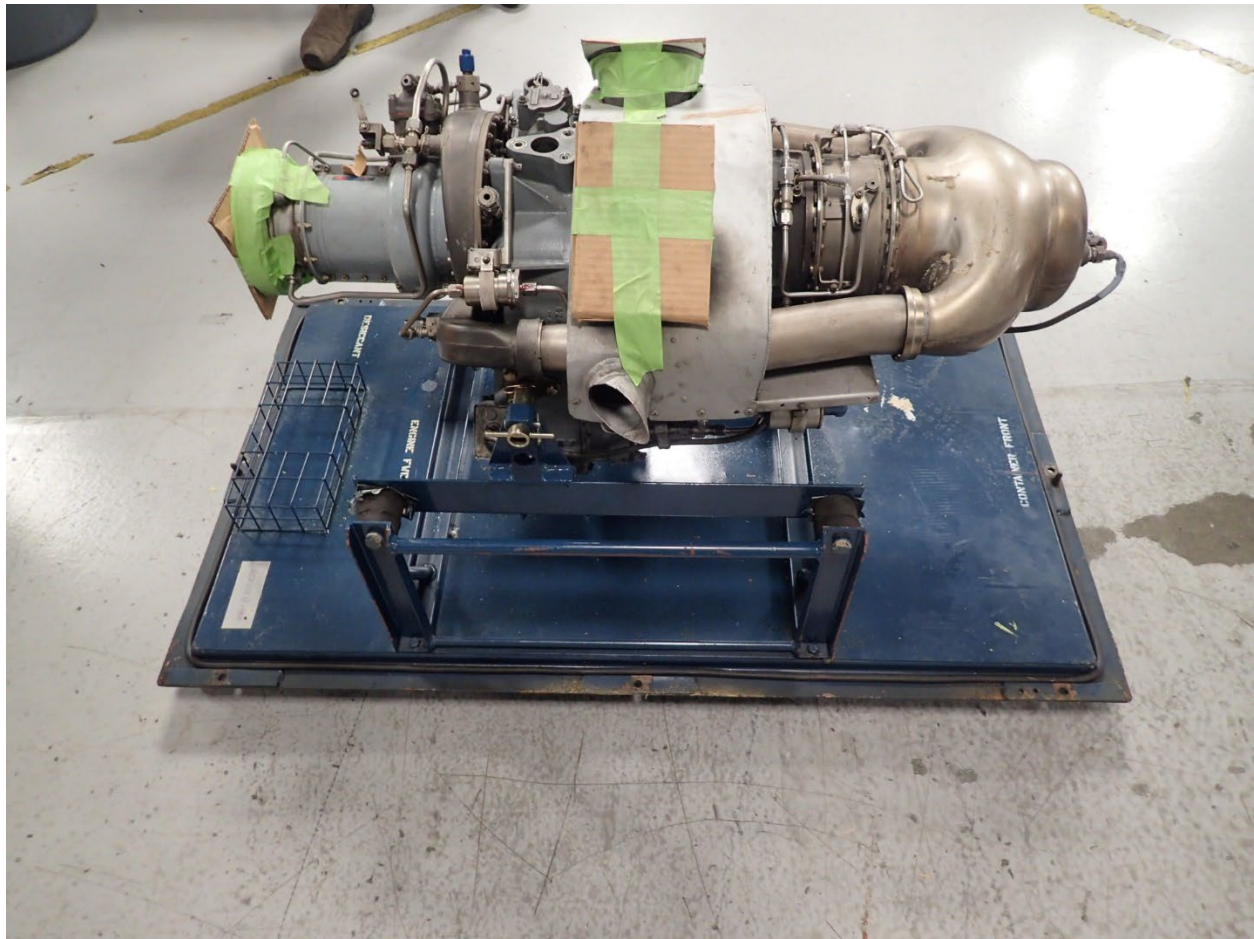


Figure 7. Left-side view of the engine.