

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



ERA21LA275

WRECKAGE EXAMINATION

August 19, 2021

A. ACCIDENT

Location: Rome, New York
Date: June 29, 2021
Time: 1347 eastern daylight time

Airplane: Bell 206B, Registration N134VG

B. WRECKAGE EXAMINATION

Investigator Tim Shaver
Federal Aviation Administration
Albany, New York

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C. SUMMARY

On June 29, 2021, at 1347 eastern daylight time, a Bell 206B, registration N134VG, was substantially damaged when it was involved in an accident at Griffiss International Airport (RME), Rome, New York. The airline transport pilot and two pilot-rated passengers sustained minor injuries. The helicopter was operated as a Title 14 *Code of Federal Regulations (CFR)* Part 91 instructional flight.

D. DETAILS OF THE EXAMINATION

1.0 Airframe Examination

Drive System:

Drive continuity was demonstrated within the main transmission. Drive system mounts were intact and secure.

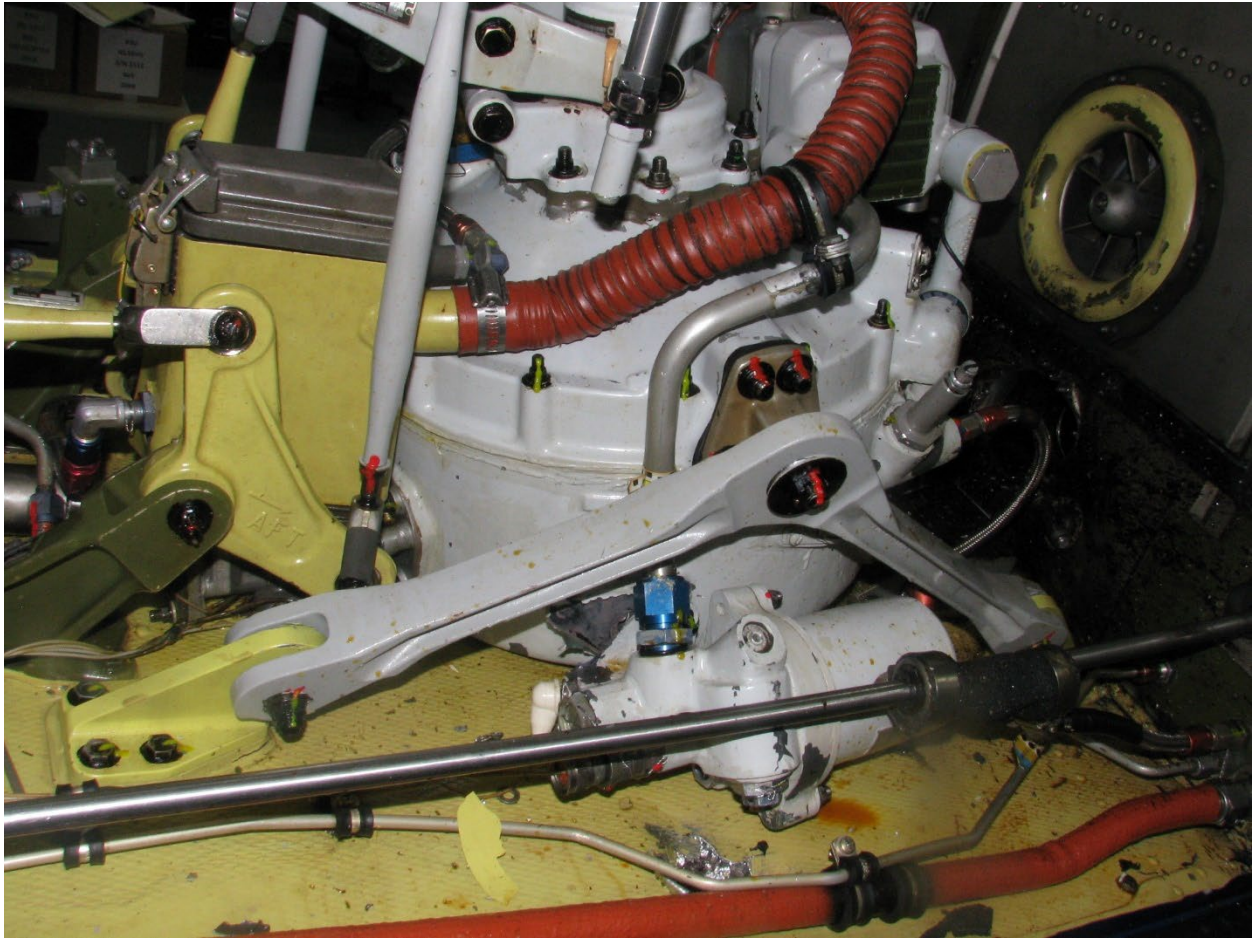


Figure 1 -Transmission and Mounts - Left Side (Courtesy Bell)

The main driveshaft exhibited disconnects at both ends with grease remnants observed from both forward and aft couplings.



Figure 2 - Main Driveshaft (courtesy Bell)

The forward transmission end exhibited axial fractures of the outer coupling consistent with misalignment during the impact sequence.



Figure 3 - Transmission side main driveshaft outer coupling (courtesy Bell)

Three bolt fragments for the main driveshaft outer coupling attachment to the transmission input shaft were found fractured or bent.



Figure 4 - Bolt remnants for main driveshaft outer coupling attachment to transmission input flange (courtesy Bell)

The aft main driveshaft end exhibited a separation of the driveshaft tube from the inner coupling which remained within the aft outer coupling that was still attached to the engine.



Figure 5 - Main driveshaft inner coupling remained in engine end (courtesy Bell)

Silver plated nuts (specified to be used) were found separated from the inner coupling retention bolts. Evidence of thread remnants from the bolts were observed in the nuts, consistent with an overload pull event at impact.



Figure 6 - Stripped silver plated nuts to secure engine end main driveshaft inner coupling to driveshaft tube (courtesy Bell)

The freewheeling unit demonstrated proper operation. The tail rotor drive system rotated by hand freely throughout the entire system, demonstrating tail rotor drive continuity.

Rotors:

The helicopter was equipped with STC main rotor blades from Van Horn Aviation. The blades both exhibited damages consistent with rollover while rotating. Both blades exhibited detached tips, trim tab separations, chordwise fractures and fragmenting of blade skins and internal foam core.



Figure 7 - Damage to main rotor blades (courtesy Bell)



Figure 8 - Recovered blade fragments including tips, blade sections, trim tabs, and foam core (courtesy Bell)

The main rotor hub was intact. Both main rotor pitch change links exhibited overload fractures.



Figure 9 - Intact main rotor hub. Both pitch change links fractured at bottom swaged surfaces consistent with overload (courtesy Bell)

Hub to mast contact marks were present.



Figure 10 - Main rotor hub static stop contact from excessive hub flapping (courtesy Bell)

The tail rotor hub and blades were intact.



Figure 11 - Intact tail rotor hub and blades (courtesy Bell)

Controls:

The throttle was found in the Off position. When the throttle was manipulated by hand during the examination to the three positions—Off, Idle, Full On (Fly)—proper corresponding positions at the fuel control unit (FCU) pointer were observed. The helicopter was equipped with dual controls. The collective exhibited free movement from the stick to the swashplate, demonstrating collective control continuity. The cyclic stick was moved by hand and free movement through the left cyclic servo to the swashplate was observed. The right side cyclic controls exhibited free movement through the right cyclic servo to the fractured horizontal control tube aft of the right servo. The fracture was consistent with overload. The tail rotor control system exhibited free movement and control continuity between the tail rotor pedals and the tail rotor blades.

Fuel System:

The fuel valve switch was observed to be On. The fuel shutoff valve was removed from the helicopter before battery power was engaged during the examination and the valve was observed to be in the Full Open position. The fuel quantity indicator exhibited a reading of approx. 12 gallons. A breach was observed near the left hand bottom surface of the fuel cell in the area near the aft crosstube. The interior of the fuel cell system and external line to the airframe fuel filter appeared intact. The remaining fuel within the fuel cell appeared to be clear. The airframe fuel filter was full of clear (slight yellow color) fuel and very little particulate was observed in the airframe fuel filter canister or the paper filter. The fuel boost pumps were activated and operated properly in the green pressure range.



Figure 12 - Airframe fuel filter canister with clear/slight yellow fuel and small amount of particulate (courtesy Bell)

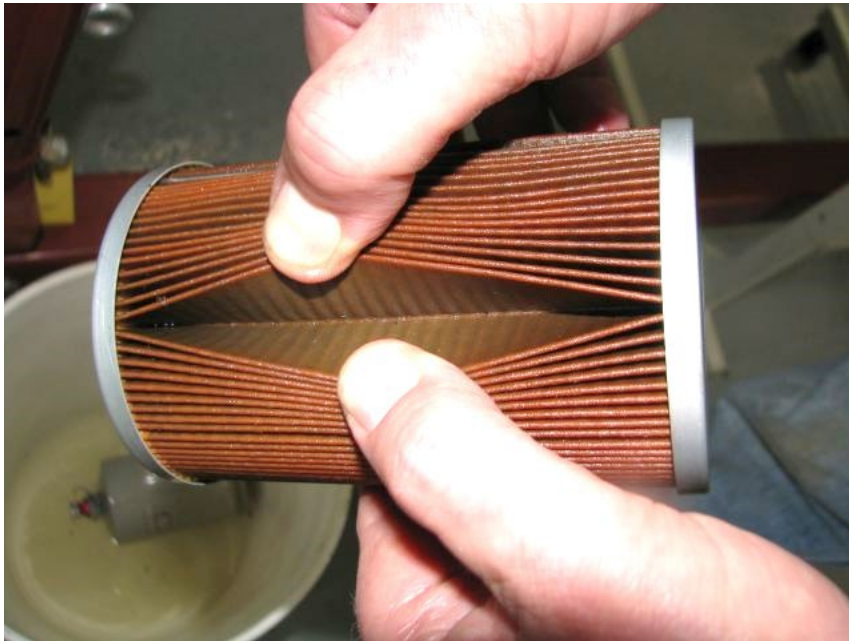


Figure 13 - Fuel filter with little particulate observed (courtesy Bell)

Airframe/Fuselage:

All seat belts were intact and the cockpit shoulder harnesses operated properly. The skids spread from the impact. The left and right windscreens were broken. The cockpit roof was cracked near the right forward transmission mount consistent with forces applied during the impact sequence. The left side horizontal stabilizer was bent consistent with a left rollover.



Figure 14 - Skids slightly spread (courtesy Bell)



Figure 15 - Left horizontal stabilizer (courtesy Bell)

2.0 Engine Examination

All the chip detectors, fuel/oil filters were free of debris. Fuel was present up to the fuel spray nozzle. All engine control pneumatic B-nuts were tight and torque striped. Control continuity from the cockpit to the engine was confirmed.

A borescope examination of the engine revealed metal splatter in the combustion chamber consistent with combustion taking place when the compressor ingested metallic fragments. No thermal erosion or other damage to the turbine blades. No evidence of abnormal combustion or streaking in the combustion chamber was found. Small, hardbody foreign object damage signatures were present on the compressor blades and stator vanes, which were otherwise intact.