

# National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR20LA163

## **AIRFRAME AND ENGINE EXAMINATION**

May 11, 2021

## **A. ACCIDENT**

Location: Fairfield, California  
Date: June 2, 2020  
Time: 1327 Pacific daylight time  
Helicopter: Bell 206L3; N65PJ

## **B. AIRFRAME AND ENGINE EXAMINATION PARTICIPANTS**

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### C. SUMMARY



Photo 1 - Overview of Accident Site (Photo Courtesy of PGE)

On June 2, 2020, at 1327 Pacific daylight time, a Bell 206L3 Helicopter, N65PJ, was destroyed when it was involved in an accident near Fairfield, California. The pilot and 2 passengers were fatally injured. The helicopter was operated as a Title 14 Code of Federal Regulations (CFR) Part 133, rotorcraft external load (Human External Cargo (HEC)) operation. The helicopter was operated by PJ Helicopters under contract from Pacific Gas and Electric (PG&E) to perform power line repair work. According to PG&E, the linemen had completed work for the day and had been picked up by the pilot. The lineman would have been connected to an external cable and airlifted back to the landing zone (LZ). During transition to forward flight, the helicopter contacted the lower power line, and impacted the ground. A witness to the accident reported that after the helicopter impacted the power line, it impacted the ground and rolled

downhill. The helicopter came to rest in a ravine. The helicopter was recovered to a secure facility for further examination.

## **D. DETAILS OF THE EXAMINATION**

### **1.0 Airframe Examination**

The helicopter and engine were examined at Plain Parts on May 11, 2021. Overall examination revealed no mechanical problems that would have precluded normal operation.



Photo 2 - Main Wreckage (FAA)

## 1.1 Fuselage

The fuselage sustained crush and deformation damage from the nose of the helicopter to the tail boom. The transmission and main rotor blades had separated at the upper deck and exposed the support bracket and flight controls (3 flight control servos (2 cyclic servos and 1 collective servo) as well as the hydraulic and manifold lines), the windshield/windows were broken because of the accident sequence. There was no evidence of main rotor blade contact with the fuselage.



Photo 3 - Layout of Wreckage (Photo Courtesy of NTSB)

### Tail Boom and Tail Rotor

The tail boom separated from the fuselage and exposed the tail rotor drive shaft. Tail rotor shaft moved without restriction and continuity was established to the tail rotor blades and the hanger bearings remained connected. The tail rotor gear box chip detector was clean. The pitch change links remained connected, and the pitch change control tube remained intact but had a bend in it.



Photo 4 - Tail boom at Accident Site (FAA)



Photo 5 - Close up of Tail rotor (NTSB)

## Main Rotor



Photo 6 - Main Rotor Mast with Transmission (NTSB)

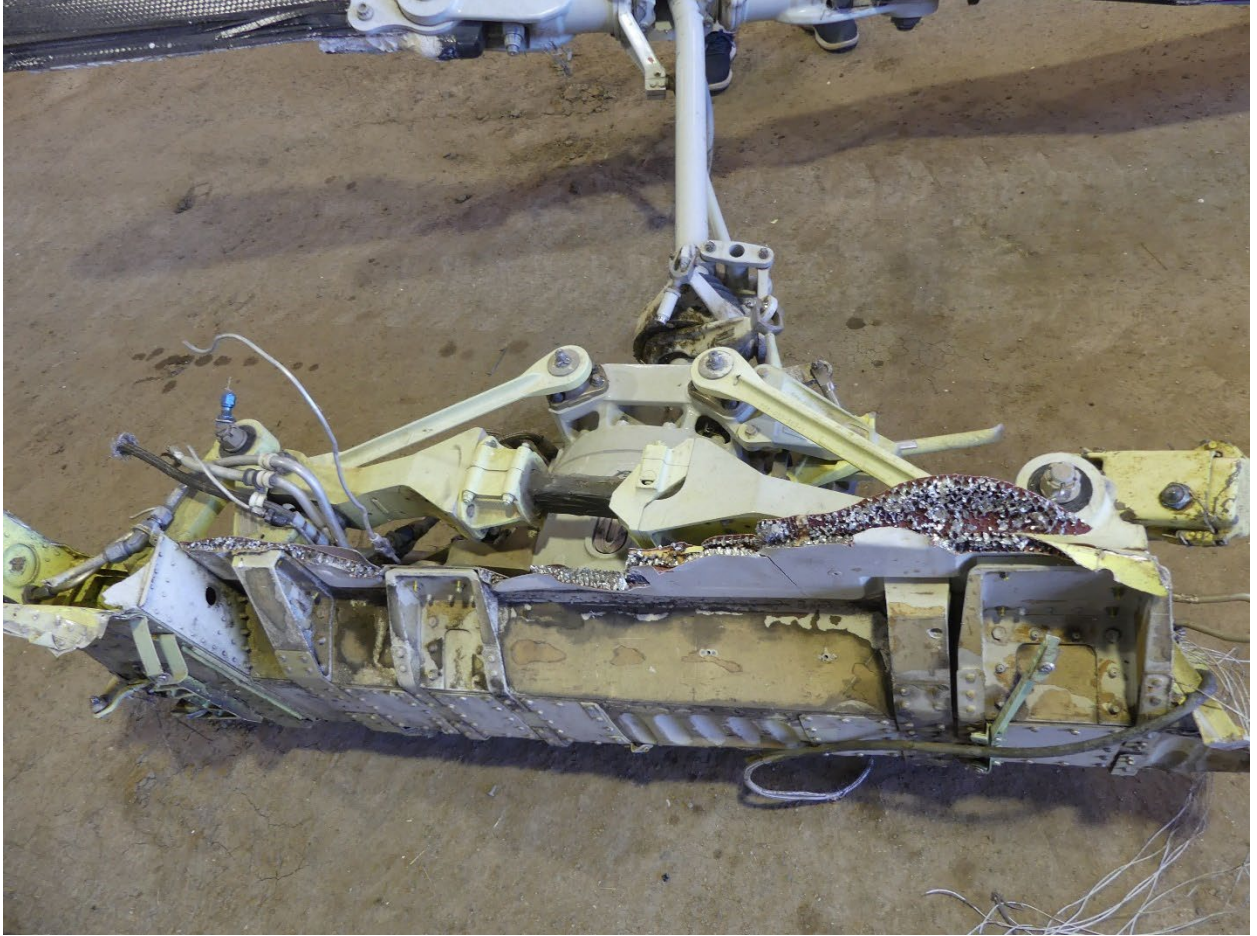


Photo 7 - View of Transmission (Bell)

The main rotor blade assembly remained attached to the transmission, which separated from the fuselage. The helicopter had the composite Van Horn main rotor blades installed (part No. 20633000-101. Control continuity was established from the cockpit to the main rotor.

Each blade was denoted as "white" and "red" for the purpose of the investigation. The white blade was mostly intact; it had fractured near the tip and the trailing edge was split down the length of the blade. Evidence of a wire strike was noted on the blade. The pitch change link remained attached but was fractured from the lower end of the tube and the pitch horn had contacted the flap. Most of the red blade had separated with outer skin delamination.

The K-flex shaft had fractured but remained connected on the transmission side.

## **Fuselage**

The fuselage remained mostly intact; the pilot's seat box exhibited crush damage. All of the windows and chin bubbles were broken out and all the doors had either been separated or removed to facilitate recovery.

The helicopter had been configured with single controls. The tail rotor pedal assembly had fractured at its attachment. Tail rotor continuity was established from the fracture of the first segmented tail rotor drive shaft aft through the tail rotor. The right elevator tab separated at its attachment points. The left elevator tab remained attached to the horizontal stabilizer but was fractured at the control tube.

Collective stick was fractured at the mounting bracket. Continuity of the collective stick through the servo actuator was confirmed. Cyclic stick continuity confirmed through to the servo actuator; there was various breaks due to impact damage throughout the system.

The left skid and forward cross tube separated from the fuselage. The aft cross tube remained partially attached to the rear of the fuselage. The right skid separated from the cross tubes.

## 2.0 Engine Examination



Photo 8 - View of Engine (NTSB)

### Fuel control unit

All lines were tight and secure but deformed from impact damage  
The throttle input rotated freely

Power turbine drive body and main body had impact damage and was fractured. The input shaft turns freely.

Initially the N1 and N2 did not turn (side of xxx was impact damaged), when it was separated, they rotated freely. Fuel nozzle was not removed due to deformation of the cannister.

Starter impact damage, there was rotational damage; however, the drive shaft was intact.

Fuel filter was clean

The free-wheeling unit operated normally

Gearbox N1/N2 turned freely

Chip detectors were clean

The engine oil pressure filter was clean

The scavenge oil filter was free of debris

There was some coking; however, that was not unusual, and the bypass button was not popped

The oil system was compromised due to impact damage

Control linkages not verified as the engine had mostly separated from the engine mounts/airframe.

No FOD in the compressor

N1 shaft broken, also consistent with impact forces.

### **3.0 Additional Information**

Harness restraint/belly hook system

Harness has a calendar year life; 5 years

Daily harness inspection performed by the linemen

Annual inspection performed by the company

Inspections also take place every time a new lineman is hired for a job

Emergency release - PGE requires their crews to have a cut-away knife for emergencies

Dual hook

Main line - calendar year life 4 years

Rated at 30k pounds

Company uses 1 line for people and one line for cargo.

Blue line - specifically for people (HEC)

Orange line - specifically for cargo

For the majority of the jobs, they will use a 60 ft line. Very rare that the 100 ft line is used. Job planning assessment are done to determine the line use.

Submitted by: T. Cornejo