

Summary

All fractures appeared to be overload due to the accident sequence. Nothing was noted that would have precluded normal operation of the aircraft.

Fuselage

Seats: Pilot's seat box exhibited crushing. Copilot seat box had a slight crease. The rear facing seat behind the pilot's upper inboard seat back bracket was broken. The rear facing seat behind the copilot cushions had been removed, all attachments appeared normal. The forward-facing bench seat, all cushions had been removed. The seat back had fractured away from the seat bottom all the way across the seat.

Windows: All windows and chin bubbles were broken out.

Doors: All doors were removed from the main fuselage, presumably during wreckage recovery.

Tailboom: The tailboom was separated from the rest of the fuselage at the attachment point. The tail rotor drive shaft cover exhibited several dents.

Horizontal Stabilizer: The right vertical fin was separated from the horizontal stabilizer. The right end of the horizontal stabilizer at the fin attachment was curled under. The left horizontal stabilizer was pulled away from the tailboom at the skin attachment.

Tail Fin: Remained installed. There was a dent on the leading edge about 1/3 from the top of fin.

Transmission: The transmission remained attached to roof. The roof area around the transmission separated from the main fuselage.

Controls

Aircraft was configured with single controls.

Tail rotor control: The pilot's tail rotor pedal assembly fractured at the attachment. Continuity from the fracture of the 1st segmented tail rotor drive shaft aft through the tail rotor was confirmed. The forward short shaft was present but not installed and bent on one end, (not sure if it was the forward end or aft end which was bent.) The blower shaft remained installed. The aft short shaft was present but not installed. The aft short shaft remained connected to the first segmented shaft. The aft hanger for the aft short shaft was fractured. The first segmented shaft was fracture with a twist about 6" from its forward disc assembly. The twist in the tail rotor drive shaft displays evidence of tail rotor drive at the time of the accident.

Elevator: The right elevator tab was separated at the attachment points. The left elevator tab remained attached to the horizontal stabilizer but was fractured from the control tub.

Collective: The collective stick was fractured at the mounting bracket. The horizontal control tube connected from the servo actuator was fractured about mid length. The vertical control tube aft of the servo actuators was fractured. Continuity of collective stick through servo actuator was confirmed.

Cyclic: Continuity of the cyclic stick up through the servo actuators was confirmed. The left cyclic servo actuator was fractured on the aft connection to the control tube. Both left and right bellcranks were fractured near the control tube connection from the servo actuator.

Landing Gear

Forward crosstube was intact but did not remain stalled on the aircraft. The mounting brackets were not present on the forward crosstube and were fractured at the fuselage. Left skid tube remained attached to the forward cross tube. The right skid tube was separated from the forward cross tube. The right skid tube fractured at the forward saddle. The right forward saddle remained attached to the forward crosstube. The aft crosstube remained semi-attached to the fuselage. Both attachment points for the aft crosstube were fractured. The left aft saddle fractured at the crosstube.

Main Rotor and Drive

This aircraft had Van Horn main rotor blades installed. The mast nut was installed. The mast made contact with the white side static stop and was bent approximately 5 to 10 degrees towards the red side. Continuity was confirmed from the main rotor drive shaft up through the main rotor. The freewheeling unit operation was confirmed by Rolls-Royce. The transmission to engine main drive shaft was still attached at the transmission via the KAflex. The aft KAflex was fractured.

White Blade: The white blade was fractured about 73" from the grip. The trailing edge of the blade was split down the length starting about 13" from the grip down to the fracture. The tip of the white blade separated from the main blade with evidence of a wire strike. The white Pitch Change Link (PCL) was fractured about 6" from the lower end of the tube. The white pitch horn contacted the flap restraint

Red Blade: The red blade was fractured about 36" from the grip. The outer skin separated from the carbon layup of the top surface of the blade (Figure 1). The white interior core separated from the lower surface of the blade (Figure 2). The trailing edge of the red blade was split down the length in a few locations with the interior core missing. The red PCL was fractured at the lower end connection.

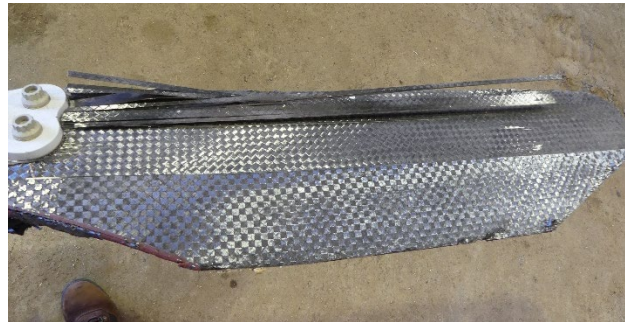


Figure 1 Top of Red Main Rotor Blade



Figure 2 Bottom of Red Main Rotor Blade

Transmission and Pylon

The transmission restraint showed evidence of scaring on the inside of the "V". Three of the four link assembly arms were intact. The aft left link assembly arm was fractured in the middle. Both upper and lower transmission chip detectors were clean. Idler lever and link, collective lever, support, inner ring, outer ring, boot, and collar set all appeared normal with connection hardware in place.

Hydraulics

Hydraulic manifold was normal with hoses attached to the servo actuators. The hydraulic reservoir was intact but mounting bracket fractured. The hydraulic pump was intact. The solenoid and relief valve were intact. The line from the hydraulic pump to the relief valve was intact, but the "T" fitting was fractured. The line from the relief valve was fractured at the fitting. The tach generator housing was fractured.