



The National Transportation Safety Board

Office of Aviation Safety
Central Region
Memorandum for the Record
Airframe Examination
Findings
CEN18FA244
Sterling City Texas
June 29 2018

General

There was no evidence of contact with obstructions during the approach. The accident site was located about 200 feet from its intended landing site on the transport trailer. Examination of the accident site showed that the helicopter impacted flat ground and came to rest on its right side. The fuselage sustained impact damage to its lower right side and both pilot and passenger doors were not installed. Three ammunition cans containing tools and several loose shotgun shells (discharged and undischarged) were present within the wreckage area. Several shotgun shells were recovered from the left floor area, the belly area and in the debris field. One shotgun shell had a dent in the plastic shell.

Airframe Examination Findings

Fuel

Both fuel tanks remained secure to airframe. Both fuel caps were secure. Fuel lines remained secure. No disconnects in fuel lines. Fuel valve was open. Fuel system vent hoses and lines appeared clear when blown thru. Total fuel remaining was less than 2 gallons. Fuel samples tested free of water, was blue in color and had the aroma of 100LL avgas.

Landing Gear

The entire landing gear came to rest on the left side of the fuselage. All four attachment points were disconnected from airframe. The aft cross tube was disconnected at the right elbow. The aft cross tube was bent slightly aft at the right elbow. The forward left elbow was rotated on the strut. The right-side skid was disconnected at the forward strut attachment. The surface of all of the disconnects were angular and jagged.

Airframe

The fuselage sustained impact damage on the lower right side. Both windshields were shattered. Both doors were not installed. The tailcone was bent down and to the right. The tailcone was fractured between bays 4 and 5. The surface of the fracture was angular and jagged.

Flight Controls

The removable flight controls were located under the left seat. The main rotor flight controls had continuity from the cyclic and collective up to the swashplate. Due to impact damage to the fuselage movement of the controls were restricted. One pitch link was disconnected at the upper rod end. The surface of the disconnect was angular and jagged. The tail rotor flight controls were jammed with the left pedal slightly forward of the right pedal. The right side of the console panel was distorted to the right with the right-side left pedal piercing the panel preventing movement. The right-side right pedal was bent to the left which coincided with impact

damage to the fuselage. The impact damage to the fuselage caused contact with the push pull tubes in the center tunnel also jamming the pedal movement. The pedals were disassembled from the control tubes revealing movement of the pedals. Continuity was confirmed from the pedals to the forward end of the A121-17 push pull tube. The surface of the disconnect at the rod end was angular and jagged. Continuity from the A121-17 push pull tube to the tail rotor blades was confirmed. The pitch control slider moved freely on the output shaft.

Powerplant Controls

The fuel mixture control knob was in the full rich position. The fuel mixture control arm on the carburetor was in the full rich position although the control cable and airbox was damaged due to impact. The carb heat control knob was down and locked. The carb heat slider valve and airbox sustained impact damage and was jammed slightly open. The governor switch was in the on position.

Drive

Both sheaves were normal. One V-belt was positioned forward of the upper and lower sheaves. The other V-belt remained within the sheave grooves. Both V-belts showed normal wear. The sprag clutch operated properly. The actuator was disconnected at the base of the screw tube. The surface of the disconnect was angular and jagged. The upper and lower actuator support bearings rotated smoothly. The forward flex coupling was slightly bent. The main rotor gearbox rotated by hand 360 degrees with no anomalies. The intermediate flex coupling was bent and twisted with score marks on the outer edges. The lower frame tube adjacent to the flex coupling had score mark running in the direction of rotation of the flex coupling. The tail rotor driveshaft damper bearing rotated smoothly. The aft flex coupling was undamaged. The tail rotor gearbox rotated by hand 360 degrees with no anomalies. The output shaft was straight

Main Rotor Blades

One main rotor blade had score marks running chordwise near the tip, was slightly bowed upward near the root and slightly bowed downward between mid-blade and the tip. The tip cover was missing with scuff marks on the outer edge. The other blade was bowed severely upward near the root with several chordwise creases throughout the length of the blade. Due to the disconnect in the pitch link this blade was positioned upside down.

Tail rotor Blades

One tail rotor blade had an indent/impression in the leading edge near the tip. The tip cap had light score marks running chordwise. The other tail rotor blade was fractured near the root from the leading edge to mid-chord. The fractured surface was angular and jagged. The tip cap had light score marks running chordwise.

Cabin

The right seat structure was crushed downward and to the left. The right door frame was crushed inward. The console was displaced to the right side.

Noteworthy

Three green metal ammo boxes containing tools were recovered from the debris field. Investigators placed the three ammo boxes on the left side floor to see the geometry of the boxes in relation to the removed left pedal assembly. It was observed that the edge of the most forward box would be over the top of the left side pedal receiver when the right pedal was positioned aft of neutral. Due to impact damage to the floor and pedal

assemblies, and the unknown position of the ammo boxes during the flight, investigators were unable to determine if the boxes may have interfered with pedal movement. Also, shotgun shells were recovered from the left floor area, the belly area and in the debris field. One shell had a dent in the plastic shell. The origin of the dent could not be confirmed.

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