

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



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WRECKAGE EXAMINATION REPORT

July 25, 2024

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A. ACCIDENT

Location: Kneeland, California
Date: July 23, 2023
Time: 1104 Pacific Daylight Time
Airplane: Cessna T206H, Registration N460DC

B. PARTICIPANTS

IIC	Stephen Stein National Transportation Safety Board Federal Way, Washington
Investigator	Kathryn Whitaker National Transportation Safety Board Federal Way, Washington
Party Coordinator	Mark Platt Lycoming Engines Phoenix, Arizona
Party Coordinator	Ryan Roth Textron Aviation Wichita, Kansas
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C. SUMMARY

The airplane was mostly consumed by post crash fire. Post accident examination of the wreckage did not reveal any preimpact mechanical anomalies with the airframe or engine that could have precluded normal operation. The flight control cables were traced to their termination points or to separations from either recovery personnel or due to overload separation. The fuel system components were destroyed or thermally damaged. The engine did not exhibit any evidence of catastrophic failure or other anomalies.



Figure 1: Main wreckage

D. DETAILS OF THE INVESTIGATION

1.0 Accident Site

The airplane came to rest inverted in a wooded area approximately 700 ft from the departure end of runway 33 at a field elevation of 2,570 ft mean sea level. The wreckage was mostly consumed by postcrash fire and the empennage was not identified within the main wreckage of the accident site or in the surrounding terrain. A debris path was marked by several broken tree branches and broken tree tops. The

First identifiable Point of Impact (FPI) was a tree scar about 3 ft long approximately 100 ft up the tree. The outboard section of the right wing was located at the base of the tree and exhibited a concave shaped depression about midspan. A balance weight from an empennage flight control was found about 100 ft east of the main wreckage. The main wreckage was located approximately 80 ft north of the FPI and was completely consumed by postcrash fire. All the propeller blades remained attached to the crankshaft through the propeller hub. All blades displayed thermal damage, torsional twisting, and tip curling.



Figure 2: Images of runway contact signatures

2.0 Airframe Examination

2.1 Fuselage/Empennage

The fuselage was completely destroyed by postcrash fire. The cockpit instrument panel was destroyed and the wires were soot stained with thermal damage. The engine firewall was deformed and thermally damaged. The tail position light was deformed by fire and a section of one horizontal stabilizer was identified from the recovered wreckage. The rest of the empennage was completely consumed by postcrash fire.

2.2 Wings

The left wing separated about midspan and exhibited a concave shaped depression about 8 inches wide at the leading edge. The left wingtip had separated and was

cracked. The position and anti-collision lights were intact. The inboard portion of the wing was thermally damaged and heavily soot stained. The aileron was destroyed by post crash fire and most of the flap remained attached with thermal damage.

The right wing separated about mid span and exhibited a 6 inch concave shaped depression at the leading edge. Multiple dents were observed along the leading edge and the wingtip cap remained attached but was cracked. Chordwise scoring was observed along the bottom of the wingtip and the bottom of the position light mounting base exhibited chordwise scoring. The left wing anti-collision light cover was fractured.

2.3 Flight Control System

Continuity of the left aileron balance and control cables was confirmed from the aileron bellcrank to the wing root. The control and balance cables were cut by recovery personnel and remained attached to the bellcrank.

The left flap control surface remained attached to the wing at both hinges. The flap bell crank remained attached at the trailing edge of the left wing and one flap interconnect cable was attached to the bellcrank. The other cable had separated from the bellcrank. Both cables were cut by recovery personnel. The left outboard flap control rod was traced to the outboard flap hinge through a separation in the rod near the first hinge. The flap control rod was connected to the flap at the third hinge and all the securing hardware was in place.

Continuity of the right aileron was confirmed from the aileron to the wing root through the bellcrank which remained secure at its normal position within the wing. The flap was separated and destroyed by post crash fire. The flap actuator measured 0.3 inches, consistent with less than 5° of flap extension. Both flap crossover cables exhibited broomstrawing consistent with overload separation and were thermally damaged. The flap motor was destroyed by post crash fire. The autopilot servo remained attached to the wing about mid span. The cable was unspooled from the servo spool wheel. The servo cable remained attached to the spool wheel, but was separated at the wing with evidence of broomstrawing consistent with overload separation.

The engine control cables were partially intact; the control lever knobs were all destroyed by post crash fire.

Both rudder cables remained attached at the cockpit rudder pedal torque tube; the left cable was continuous to the cabin and the right cable was continuous to about the baggage area. Both rudder pedal connections for the right and left side remained attached to their respective torque tubes. The rudder trim control wheel was damaged by fire and covered in soot. The elevator control torque tube was damaged

by postcrash fire and was separated from the flight control column. An approximately 3 inch long section of the right elevator control cable remained attached to the torque tube through a bell crank and opposing end exhibited evidence of overload separation. The left elevator control cable separated from its bellcrank was not found in the recovered wreckage. The elevator trim control cable remained attached to the cockpit chain, which was separated from its sprocket. The trim cable had separated from the right elevator actuator. Which was not observed in the wreckage The aileron yoke interconnect cable was separated from the control column and damaged by postcrash fire.

2.4 Fuel System

Both the right and left fuel tanks were destroyed by postcrash fire. The left fuel tank quantity sensors remained attached to the remaining portion of the fuel tank at the wing. All the fuel lines were destroyed by postcrash fire. The fuel gascolator was thermally damaged as was the fuel pump; both had separated from the airframe. The gascolator screen was free of debris. The fuel selector valve was not observed in the wreckage.

2.5 Seats and Restraint System

All four seat frames were recovered from the accident site. The forward two seat frames remained attached to the seat structure bases at all four brackets. One seat buckle and one inertial reel were recovered; the remaining seat restraint buckles and latches were presumably destroyed by postcrash fire as they were not identified within the recovered wreckage. Two of the four seat airbag canisters remained attached at the forward seats. The two aft seat airbag canisters had separated from their mounts.

3.0 Engine

Engine Manufacturer: Lycoming
Engine Model Number: TIO-540-A31A
Engine Serial Number: L-14617-61E
100 hour / Annual inspection conducted: 100-Hour
Last Overhaul: TSO:

The engine remained attached to the engine mounts. The crankcase was intact, with no openings observed. The crankshaft could not be rotated by hand. The propeller governor was removed, and with the use of special tooling the camshaft could be rotated, affecting in normal valve movement to all valves except the #5 exhaust valve. Examination of the cylinder combustion chambers with a lighted borescope revealed normal exhaust deposits. The camshaft, crankshaft, and connecting rods were examined with a lighted borescope; each were unremarkable. The crankshaft gear

remained bolted to the crankshaft end. The oil suction screen contained no metallic debris.

Both magnetos were thermally damaged. The left magneto had separated from the accessory housing. The right magneto remained attached. The ignition leads were destroyed. The spark plug electrodes displayed normal wear.

The servo housing was thermally destroyed. The throttle and mixture linkages remained attached to their respective control cables. The servo screen contained no foreign debris. The fuel flow divider remained mounted to the engines, and the fuel lines remained attached. The fuel flow divider diaphragm was thermally destroyed. The fuel nozzles were free of blockage. The engine driven fuel pump remained attached to the accessory case and was unremarkable.

The exhaust risers remained attached to their respective cylinders. The turbocharger appeared undamaged. The turbocharger impeller rotated freely.

The propeller remained attached to the engine crankshaft. The spinner was crushed and thermally damaged. All three propeller blades remained mounted in the spinner and could not be rotated by hand. For identification purposes in this report, the blades are labeled A, B, and C.

Blade A was exhibited torsional twisting, bent opposite the direction of rotation, and bent aft about 45°. The trailing edge near the tip showed wavy deformation.

Blade B was exhibited torsional twisting and an S-bend. The trailing edge near the tip showed wavy deformation.

Blade C was exhibited torsional twisting and an S-bend. The tip leading edge was damaged, and the trailing edge showed wavy deformation.

4.0 Airport Information

Kneeland Airport (O19), Eureka, California was collocated with the CAL FIRE Kneeland Helitack Base. The airport's sole asphalt runway was 2,250 ft long and 50 ft wide in a 15/33 configuration. The FAA chart supplement published July 11, 2024 notes "Thld dsplcd 74'. Trees" and "drop off 40' from Rwy 33 thld."

A gouge was located about 400 ft from the runway end on the left side of the runway centerline with an adjacent scrape mark. A tie down ring was located near the gouge on the right side of the runway centerline. Two parallel tire marks were observed about 12 ft forward of the gouge, which was lined up between the tire marks. The gouge, scrape, and tire marks were oriented approximately 25° left of the runway centerline. A 22 foot long white scrape mark was located on the left side of the

runway adjacent to a set of blue scrape marks oriented about 10° left of the runway centerline. Another parallel scrape mark was located next to the blue marks and was comprised of metallic fragments.

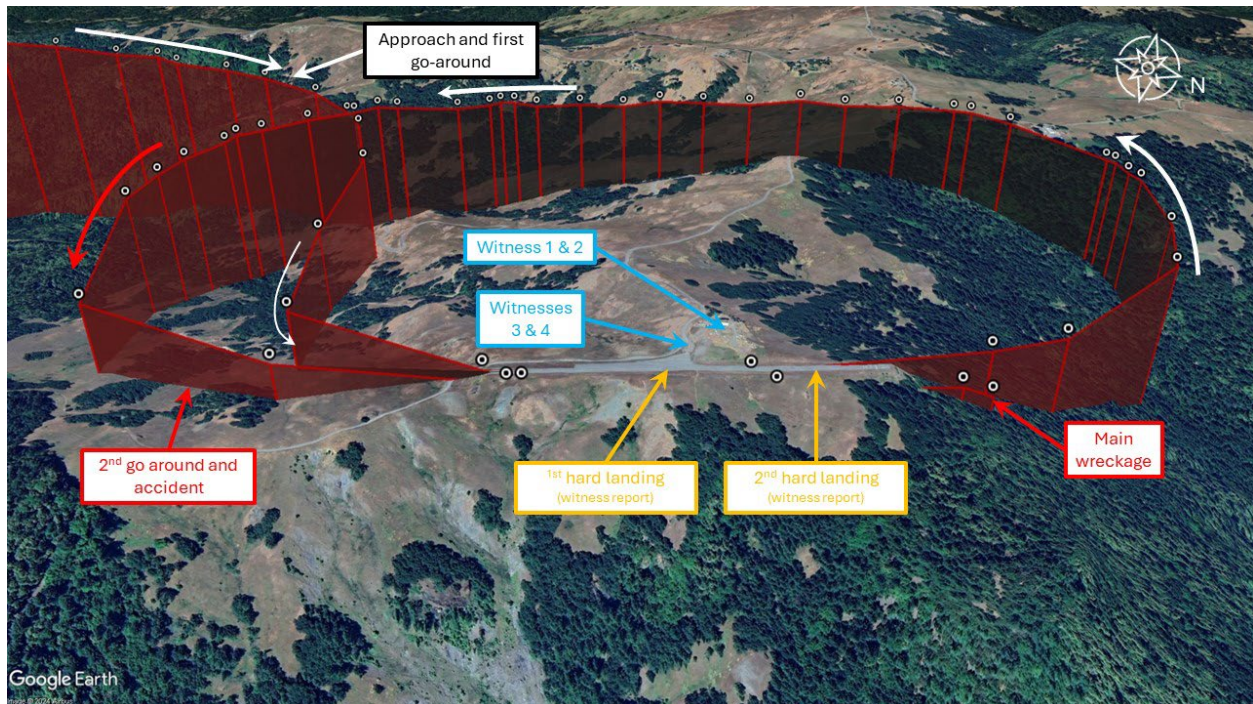


Figure 3: Flight track with witness positions and runway contact points



Figure 4: Gouge mark and adjacent scrape



Figure 5: Long white runway contact mark



Figure 6: Blue runway contact marks



Figure 7: Metal fragment located next to blue contact marks

Submitted by:

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