

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



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AIRFRAME AND ENGINE EXAMINATION REPORT

May 1, 2023

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A. ACCIDENT

Location: Watsonville, California
Date: August 18, 2022
Time: 1455 Pacific daylight time
Airplane 1: Cessna 340A / N740WJ
Airplane 2: Cessna 152 / N49931

B. AIRFRAME AND ENGINE EXAMINATION REPORT

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SUMMARY

On August 19, 2022, both airframes were examined at their respective accident sites. Due to the circumstances of the accident, the engines of both airplanes were not examined beyond a visual examination.

DETAILS OF THE EXAMINATION

1.0 Accident Site Cessna 340A

Cessna 340A. Serial Number: 340A0740. N740WJ came to rest inside the storage room of a hangar located on the South end of the airport, about 1,200 ft from the center of the airport, on a 189° magnetic (M).

2.0 Airframe Examination Cessna 340A

2.1 Fuselage.

Fuselage. The fuselage was substantially damaged throughout. The nose section exhibited substantial crushing and fragmentation to the windshields. Both windshields were shattered. The body of the fuselage remained intact. The fuselage aft of the cabin space was extremely crushed and wrapped around the left side of the cabin. The left side of the fuselage forward of the left wing exhibited accordion style aft crushing. The left-side windshield framework was absent and exhibited damage from where the left horizontal stabilizer penetrated the windshield structure. The left and right-side engine nacelles were fragmented, and both separated from the wings. Both left and right engines separated from their respective wings at their mounts. The right-side engine was located outside of the hangar and the left engine was located inside the hangar. Both propellers and propeller flanges separated from their respective engine crankshafts.

2.2 Empennage

Empennage. The empennage was substantially damaged. The left and right horizontal stabilizer assembly remained partially attached to the fuselage and exhibited crushing and tearing of the sheet metal. The left and right elevators remained attached to the horizontal stabilizers and exhibited similar crushing and tearing. The vertical stabilizer remained attached to the fuselage and exhibited substantial damage in the form of bending and sheet metal damage yet retained its structural integrity and shape. The rudder separated from the vertical stabilizer at the top hinge and remained attached at the bottom hinge. The rudder was substantially damaged.

2.3 Wings

The right wing separated from the fuselage at the wing root and came to rest upside down about ten ft outside of the hangar. The wing exhibited thermal damage throughout. The right-wing tip tank (right main tank) had separated from the wing. The outboard tip exhibited impact damage running from the leading-edge inboard. The leading edge of the wing, from damaged tip to the right-wing engine nacelle,

exhibited thermal damage to the rubber boot but no impact damage. The engine and engine nacelle separated from the wing. The main wing spar fractured at the inboard location of the right-wing engine nacelle. The right aileron separated from the wing and was in the nearby debris area. The aileron remained intact with minimal damage. The airplane was equipped with split flaps that deployed in two sections per wing. The right-side flaps remained attached to the underside of the wing and were free to travel and exhibited minimum damage to the flap surfaces. While the flaps appeared to be fully extended, the controlling device had been sheared. The right-wing tip tank fractured into multiple sections and exhibited crushing at all the sections along with inward crushing on the nose of the tank. There were thermal damage signatures on the nose section. The fuel cap remained secured to the tank. When opened, the cap exhibited a functional vent and a soft rubber seal.

The left wing, from the outboard side of the engine nacelle to the tip, separated from the airplane near the root and was located about 10 to 15 ft outside the hangar. The remainder of the wing remained attached to the fuselage. The wing exhibited extreme fractures and fragmentation along with thermal damage. The left aileron separated from the wing and fractured into two pieces. The left flaps remained attached to the wing. The left-wing tip tank separated from the wing and fractured into multiple sections. The sections exhibited thermal damage. The fuel cap remained secured to the tank. When opened, the cap exhibited a functional vent and a soft rubber seal. The aft fuselage, from aft of the cabin to the empennage, separated from the cabin and was crushed when it was forced 180° around to the left side of the fuselage. All structural integrity was lost as the aft fuselage was compressed against the left side of the cabin area.

2.4 Landing Gear

Main Landing Gear (MLG). The right-main landing gear remained attached to the underside of the wing and was found in the retracted position. The left main landing gear remained attached to the underside of the left wing and was not fully retracted. The nose gear remained partially attached to the highly fragmented nose section of the fuselage.

2.5 Cockpit

Cockpit Documentation. The cockpit was substantially damaged. The floor was crushed upwards and inwards greatly reducing the lower area available space. The left seat was partially pulled back, likely during the recovery efforts. The right seat remained partially attached at the rails. The instrument panel remained partially attached to the cabin. The flap control lever was in the full up position. The flap indicator had a witness mark near the full up position.

2.6 Flight Control Continuity.

Flight Control Continuity. Due to the pilot not reporting an emergency or flight control issue, a flight controls continuity check was not conducted.

2.7 Fuel/Fuel System.

Due to the pilot not reporting a fuel emergency, the fuel and fuel system was not examined.

2.8 Engine Examination.

Due to the pilot not reporting an engine emergency, the engines were not examined further than a visual examination.

2.9 Propeller Examinations

The right-side propeller and propeller flange separated from the engine. The three-bladed propeller exhibited S-bends, chord-wise bends, and tip curling. One blade exhibited a chord-wise aft bend.

Propeller. The right-side propeller and propeller flange separated from the engine. The three-bladed propeller exhibited S-bends, chord-wise bends, and tip curling. One blade exhibited a chord-wise aft bend. The left propeller and propeller flange separated from the engine. The three-bladed propeller came to rest near the taxiway. The three blades were twisted, bent aft, and exhibited significant rotational score marks near the tip of each blade.

3.0 Airframe and Engine Examination Cessna 152

The main wreckage of the Cessna 152 was on airport property about 800 ft North from the threshold of runway 20. The debris field was about 750 ft long and on a magnetic heading of about 234 degrees. The first identified parts in the debris field were sections of the left wing, left elevator and left horizontal stab, that were found on a neighborhood street adjacent to the airport property. Other sections of the left wing were found further in the debris field on the airport property. A Cessna 340 left wing tip tank nose cap and a section of the wing left tip tank trailing edge fairing with an attached static wick were also found in this area. Several wing sections revealed blue transfer marks near the severe impact areas. About 460 ft further in the debris field, near the main wreckage, an initial impact crater and ground scars were identified. The crater was about 10 inches deep and about 4 ft in diameter.

3.1 Fuselage

The main wreckage came to rest on its left side on a magnetic heading of about 50 degrees. The right wing remained partially attached to the main wreckage through the side strut and fuselage wing attachment. The cabin roof remained attached to the right wing. It was undetermined if first responders removed the roof section from the fuselage. The left cabin seat shoulder harness was cut, and the left seat lap belt was undamaged and was unbuckled.

3.2 Empennage

The stabilizer was found in two sections. The elevator inboard side separated and was found on the elevator interconnect control rod that remained attached to the main wreckage. The impact signatures found were consistent with impact from the rear. Blue paint transfer marks were visible at the separation areas.

3.3 Wings

The right wing was on the ground inverted and had crush damage. The right-wing flap and aileron flight controls remained attached to the wing. The right-wing tip fairing separated from the wing and was found near the main wreckage.

The first identified parts in the debris field were sections of the left wing, left elevator and left horizontal stab, that were found on a neighborhood street adjacent to the airport property. Other sections of the left wing were found further in the debris field on the airport property. An inboard section of the left wing [about 4 ft in length] was found near the main wreckage. The inboard section contained the left fuel tank and attached inboard flap section. The wing tank cap was undamaged and did not have a chain lanyard. The outboard separated side of the wing and flap had impact damage consistent with impact from the rear. Blue paint transfer marks were visible in this area. The trailing edge wing stiffener at the outboard side was curved in a circular pattern and had a radius of about 5 inches.

3.4 Landing Gear

The nose landing gear and both landing gear struts remained attached to the fuselage. The left main landing gear wheel and brake assembly separated from the main wreckage and was found a 100 ft further in the debris field.

3.5 Cockpit

The forward fuselage and cabin area were crushed and distorted to its right side. The cabin roof separated from the fuselage and remained partially attached to the forward left window post. An emergency locator transmitter (ELT) was installed in the

back left side of the aft fuselage. The ELT antennae remained attached, and the ELT activated. The signal was heard over VHF communications radios.

3.6 Flight Control Continuity

Due to the pilot not reporting a flight control emergency, the flight control continuity was not examined.

3.7 Fuel System

Due to the pilot not reporting a fuel emergency, the fuel and fuel delivery system was not examined.

3.8 Engine Exam

The engine cowling had impact damage and most of the upper cowling had separated. The lower cowling remained partially attached. The engine remained attached to the fuselage and the engine carriage mount assembly was distorted. The forward side of the engine had impact damage and the crankshaft propeller flange was damaged. The forward mounted belt driven alternator had impact damage.

3.9 Propeller

The propeller blade assembly separated from the engine and was found partially buried about 1 ft in the ground. The blade was removed from the crater and one of the blades showed s-bending and the other blade had scuffing of its surface. The propeller damage was consistent with an undetermined amount of engine power at the time of impact with the ground. The starter ring gear was found in sections in and around the crater.

4.0 Photo Gallery

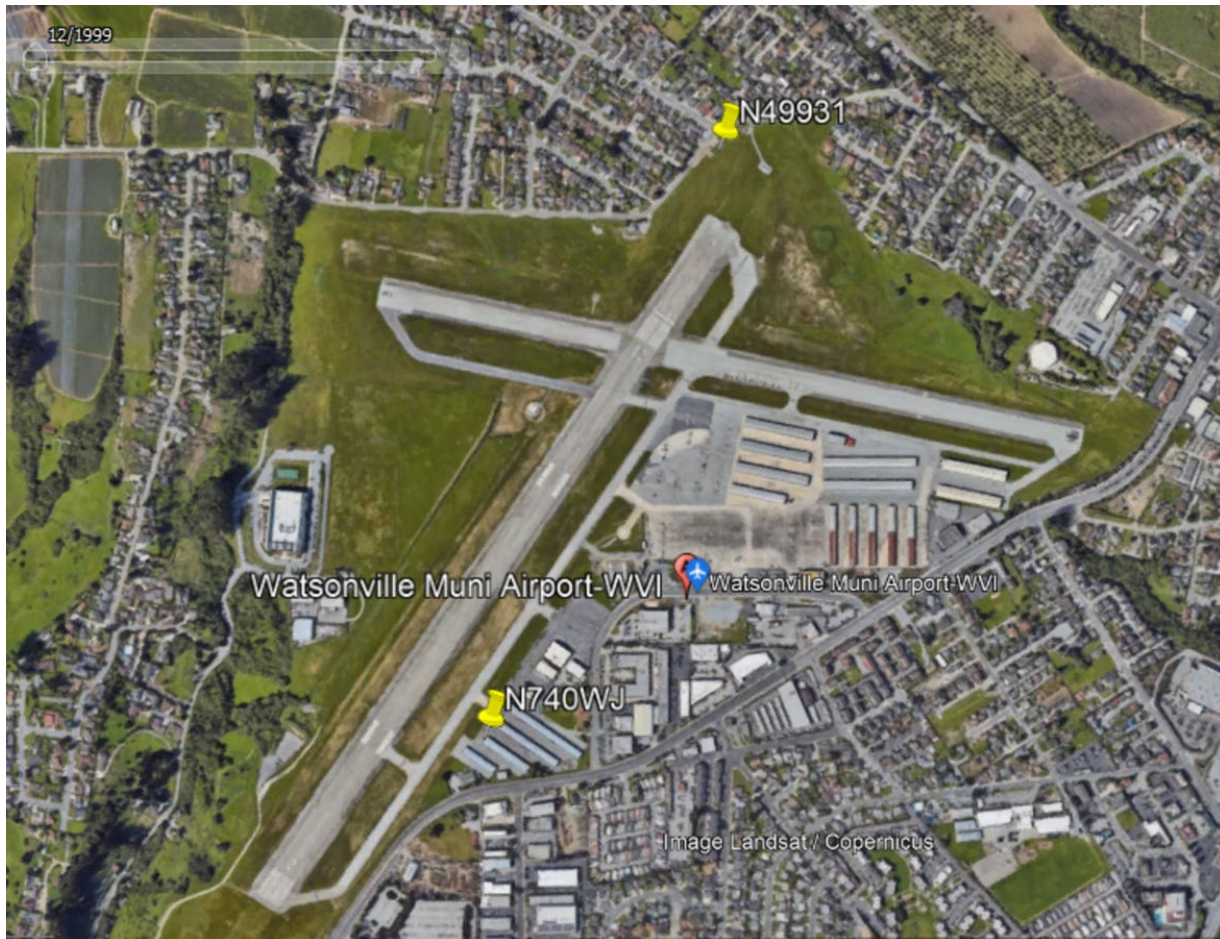


Figure 1. Overhead view of the accident sites.



Figure 2. Overhead view of N740WJ site.



Figure 3. N740WJ in hangar.



Figure 4. Close up view.



Figure 5. First point of probable impact.



Figure 6. Left propeller. Right propeller in background.



Figure 7. Right Propeller



Figure 8. Right engine.



Figure 9. Left engine.



Figure 10. Right Wing.



Figure 11. Right wing and aileron.



Figure 12. Left wing and aileron.



Figure 13. Left and right main fuel "tip tanks."



Figure 14. Left-side view of empennage.



Figure 15. Empennage.



Figure 16. N740WJ flap extension handle. Photo Textron.



Figure 17-Google Earth view of the Cessna 152 accident site.



Figure 18-Accident site, view to the southwest, impact crater and Cessna 152 main wreckage.



Figure 19-Main wreckage and right-wing view.



Figure 20-Main wreckage, view of the cabin, cabin roof and right wing.



Figure 21-Main wreckage, view of the lower fuselage.



Figure 22-Main wreckage, engine assembly.



Figure 23-Left wing inboard section.

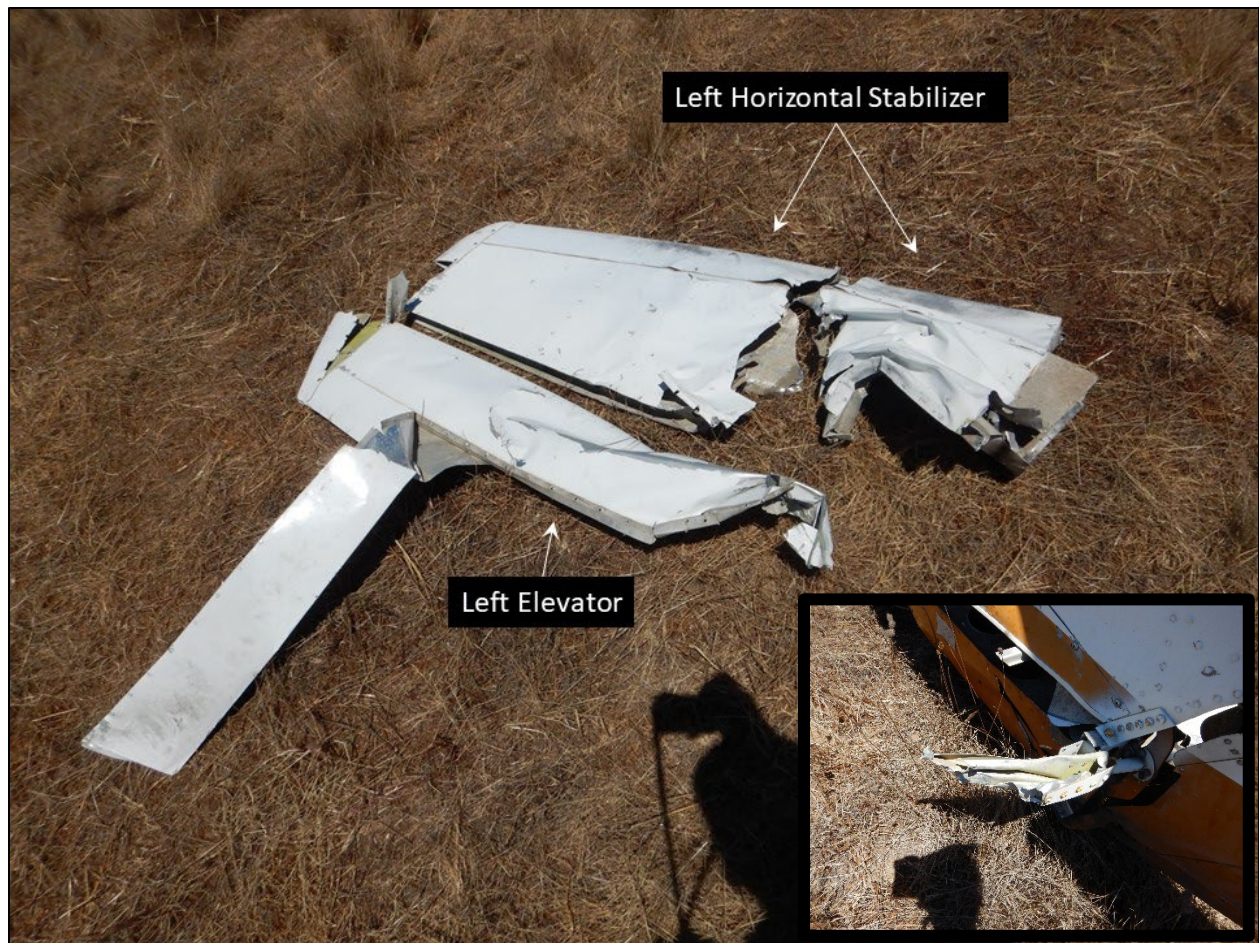


Figure 24-Left elevator [left elevator section] and left horizontal stabilizer sections.



Figure 25-Left wing, elevator, and stabilizer layout.



Figure 26. Two sections of the Cessna 340's left-wing tip tank. Photo Textron.

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