

National Transportation Safety Board

Office of Aviation Safety

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WRECKAGE EXAMINATION

July 5, 2024

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A. ACCIDENT

Location: Lock Haven, Pennsylvania
Date: July 4, 2024
Time: 1010 EDT
1410 UTC
Airplane: N739GV; Cessna 172N

B. WRECKAGE EXAMINATION

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C. SUMMARY

On July 4, 2024, about 1010 eastern daylight time, a Cessna 172N airplane, N739GV, was destroyed when it was involved in an accident near Lock Haven, Pennsylvania. The student pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

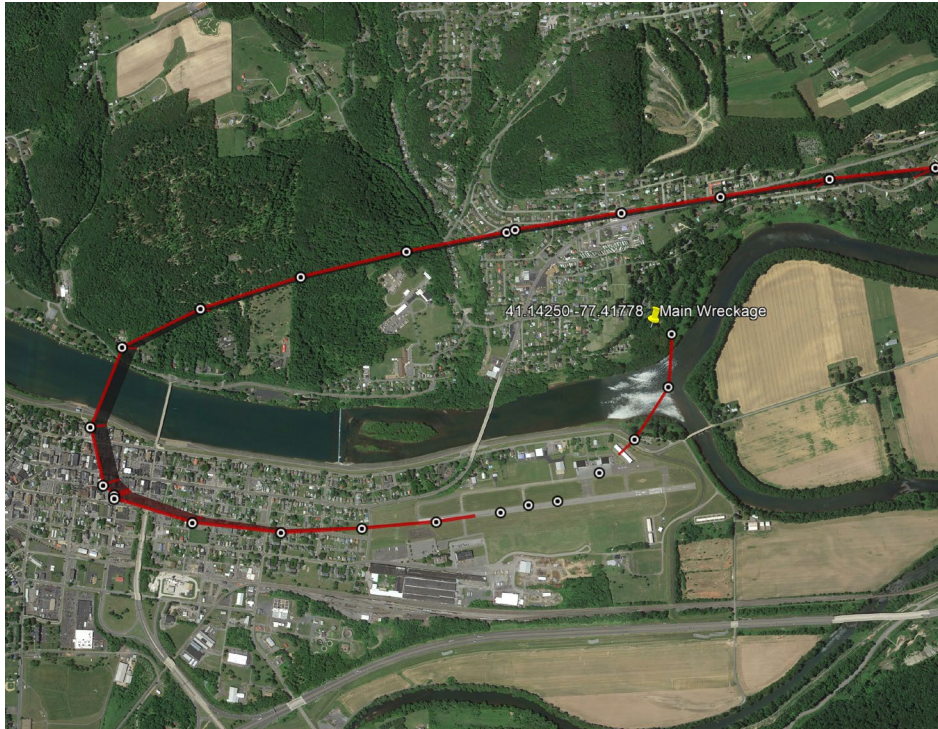
D. DETAILS OF THE EXAMINATION

1.0 Accident Site

The airplane initially collided with the top of a large maple tree at coordinates 41.142579, -77.417208. The airplane continued for about 165 ft until it struck another tall tree, about 4 ft in diameter, and about 55 ft up the tree and the main wreckage came to rest, upright, at the base of the same tree on a westerly heading. A postaccident fire consumed a majority of the wreckage.

Several fragments of tree limbs with diameters up to about 6 inches were observed in the impact area with cuts at about 45 degrees consistent with propeller strikes. One of the cuts displayed dark colored paint transfer consistent with the paint from the propeller blades.





The accident site was about 0.45 nm NNE of the center of runway 9 at William T. Piper Memorial Airport (LHV) in Lock Haven.

2.0 Airframe Examination

The wreckage was examined and documented at the accident site on July 5, 2024. After the examination, the wreckage was transported to Anglin Aircraft Recovery, Clayton, Delaware. A follow-up examination at the salvage facility was not performed.

2.1 Fuselage

Flight control continuity was not established due to the extent of thermal and impact damage.

The rudder control cables remained attached to the rudder pedal torque tubes and were fractured in a manner consistent with overload approximately 18" aft of the rudder pedal torque tube attachment points. Portions of the elevator and rudder control cables sustained multiple breaks and became thermally fused to the airframe structure near the main landing gear bulkhead. The elevator push/pull rod below the cockpit floorboard remained connected at each end. It was thermally damaged with the up elevator ear bent upward. The

up elevator control cable clevis end remained attached to the cockpit bellcrank but the cable was not attached. The down elevator cable remained attached to the cockpit bellcrank. The aileron balance control cable remained attached at each aileron wing bellcrank and was fracture-separated near the left wing root. The right aileron bellcrank was thermally separated from the wing. The left aileron wing bellcrank remained attached to the wing structure. The aileron direct control cables remained attached to the aileron wing bellcranks. They were fracture-separated and sustained thermal damage near the forward section of the cockpit. The aileron control cables remained attached to the control chains, which remained wrapped around the control column sprockets. The aileron control cable drum in the cockpit was consumed by fire. The elevator trim chain was attached to the trim control cable. The rudder trim mechanism in the cockpit was not observed. The elevator trim actuator in the empennage was measured to be in the neutral position. The flap actuator was thermally damaged and was found in the flaps fully retracted (up) position.

2.2 Empennage

The complete right elevator and the outboard elevator attachment portion of the horizontal stabilizer were found suspended in a tree approximately 30' from the main wreckage. The horizontal stabilizer portion exhibited tree impact signatures.

The empennage was also thermally separated from the fuselage. The left horizontal and vertical stabilizer remained intact.

2.3 Wings

What appeared to be the length of the right wing spar was observed supported between the tree forks near the base of the impacted tree, and thermally molded to the shape of the tree with all wing ribs and skin burned away. Portions of the left wing were observed thermally damaged with the main wreckage. The left wing was with the main wreckage and sustained thermal damage which consumed a large portion of the wing structure.

2.4 Landing Gear

Both main landing gear were intact, thermally damaged, and found within the main wreckage burn area. The nose landing gear was intact and was not thermally damaged.

2.5 Cockpit

The cockpit and instrument panel were consumed by postaccident fire. Loose instruments and avionics were observed with thermal damage within the debris field. No instrument readings were legible. The wire harnesses and switches were thermally-damaged and no switch positions were legible.

The seat belt webbing was consumed by fire. One seat belt buckle was found latched in the wreckage debris. The attach point for the inertial-type secondary seat stop was observed on the pilot's side floorboard. The remainder of the stop was not observed. The pilot seat rails were observed with impact and thermal damage. The outboard copilot seat rail was not observed due to thermal damage. The pilot and copilot seats were fractured into multiple segments and sustained thermal damage.

The pilot and copilot seats were impact- and thermally-damaged and were liberated from the seat rails. The seat rails were thermally-damaged.

2.6 Survivability

The accident was not survivable.

The emergency locator transmitter was fire-damaged and its identifying information was not legible.

2.7 Fuel/Fuel System

The fuel selector was thermally damaged. Its tank position was not determined. Both aluminum wing fuel tanks were breached and sustained thermal damage. The majority of the aluminum fuel lines were consumed by fire. The fuel finger screens in the wings were observed thermally damaged without debris. The fuel caps were thermally damaged but appeared to be in place.

3.0 Engine Examination

As first observed, the engine came to rest on its right side and remained partially attached to the aircraft through the tubular mount.

The engine crankcase was discolored consistent with exposure to the post-impact fire. The rear-mounted engine accessories were fire-destroyed. The engine exhaust tubes were cut and the muffler was observed to be unobstructed. The engine was removed from the firewall, suspended from a lift

and partially disassembled to facilitate the examination. The engine crankshaft was rotated by turning a tool inserted into the vacuum pump drive pad and continuity of the crankshaft to the rear gears and to the valve train was confirmed. Compression and suction were observed on all four cylinders. The interiors of the cylinders were observed using a lighted borescope and no anomalies noted.

The carburetor remained attached to the engine. The throttle cable remained attached to the carburetor throttle control arm and was bent near the cable rod end. The arm was positioned at the full throttle stop. The mixture control cable remained attached to the carburetor mixture control arm. The cable support structure was impact-damaged. The control cable sheath was not secured in the support structure cable clamp. The carburetor mixture control arm was observed in a mid-range position. The carburetor was removed and partially disassembled. Liquid with an odor consistent with aviation gasoline drained from the carburetor fuel inlet hose when the carburetor was tilted. The carburetor bowl was about 1/3 full of blue liquid. No water was observed. No damage to the brass floats or other internal components was observed. The carburetor fuel inlet screen was unobstructed.

The induction air box remained attached to the carburetor. The carburetor heat cable was separated from the air box carburetor heat control arm and the position of the carburetor heat valve was unreliable. The cockpit throttle, mixture and carburetor heat controls were fire-destroyed.

Both magnetos remained attached to the engine and were fire-damaged. No spark was produced when the magneto drives were rotated by hand. The distributor block covers of both magnetos were removed and the distributor blocks were observed to be destroyed by fire.

The spark plug electrodes exhibited dark gray coloration and normal wear condition. The engine came to rest on its right side and the nos. 1 and 3 bottom spark plug electrodes were oil-soaked.

The engine ignition harness was fire-destroyed.

The starter remained attached to the engine. It was fire-damaged and not removed.

The alternator remained attached to the engine. It was fire-damaged and not removed. Remnants of the fire-damaged alternator belt remained in place.

The vacuum pump remained attached to the engine. The composite drive assembly was fire-destroyed. The carbon rotor and carbon vanes were observed intact.

The engine came to rest on its right side. When the engine was righted and suspended from a lift about 5 quarts of oil were observed indicated on the oil dipstick. No debris was observed in the oil suction screen. The oil filter element was charred but no metallic debris was observed between the oil filter media pleats.

4.0 Propeller Examination

The propeller remained attached to the engine crankshaft flange. The propeller spinner remained attached to the propeller and was crushed and twisted opposite the direction of rotation, consistent with rotation of the propeller at impact. One propeller blade was bent aft about 30° at about 8 inches from the propeller tip. The other propeller blade was twisted toward the propeller face at about 2/3 of the propeller span. That blade also exhibited leading edge paint abrasion.

Submitted by:

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