NATIONAL TRANSPORTATIONS SAFETY BOARD
Office of Aviation Safety
Washington, DC 20594

SUMMARY OF ACCIDENT SITE AND AIRCRAFT EXAMINATIONS

-- CEN18FA107 --

A. ACCIDENT

Location:	Rossville, IN
Date:	February 22, 2018
Time:	1939 eastern standard time
Aircraft:	Cessna 441 Conquest II airplane (s/n 441-0065), N771XW

B. PARTICIPANTS

Pam Sullivan
Senior Air Safety Investigator
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Terry J. Kleiser
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C. ACCIDENT SUMMARY

On February 22, 2018, at 1939 eastern standard time, a Cessna 441 Conquest II airplane, N771XW, was destroyed when it impacted the terrain and trees in Rossville, Indiana. The pilot and two passengers were fatally injured. The airplane was registered to Ponderosa Aviation LLC and operated under the provisions of 14 Code of Federal Regulations Part

91 as a business flight. Instrument meteorological conditions prevailed for the flight, which was operated on an instrument flight rules flight plan. The flight originated from Eagle Creek Airpark (EYE), Indianapolis, Indiana, about 1920. The intended destination was the Green Bay Austin Straubel International Airport (GRB), Green Bay, Wisconsin.

D. GENERAL DESCRIPTION

Airframe

The Cessna 441 Conquest II is an eight to ten-place, twin-engine airplane, with a pressurized cabin and a retractable tricycle landing gear. The airplane is certificated as a normal category airplane, with a maximum operating altitude of 35,000 feet. The main cabin entry door is located on the left side of the airplane, aft of the wing and common to the aft portion of the cabin.

The airplane is equipped with an icing protection system including: pneumatic deice devices (boots) for the wings and stabilizers, and electrical deice elements for the propeller, windshield, pitot tubes, and stall warning sensor. Flight into known icing conditions is approved, except for severe icing conditions.

Engine Assembly

The Honeywell TPE331-10N turboprop engine is capable of producing 715 shaft horsepower at 2,000 rpm. The engine design features an integral gearbox, two stage centrifugal compressor, reverse flow annular combustor, and a three-stage axial flow.

Propeller Assembly

The Hartzell propeller assembly is a four-blade, hydraulically actuated, constant speed design configuration, with feathering and reverse pitch capability.

E. DETAILS OF AIRCRAFT EXAMINATIONS

The on-scene examination began on February 23, 2018.

All examinations and testing were completed under the direct supervision of the NTSB investigator-in-charge. Textron Aviation and Honeywell provided technical support to the investigation as a party to the NTSB.

F. DESCRIPTION OF ACCIDENT SITE

The accident site was located about 0.34 miles north of the town of Rossville, Indiana. The latitude and longitude of the initial impact site were 40°27’52.77” N and 86°36’46.25” W respectively.

The airplane impacted the terrain in a plowed field (upper field) which was soft and muddy. A shallow disruption of the dirt was present which was about 250 ft in length. The impact mark was present up to the crest of a slight incline where the main pieces of wreckage began. Trees bordered the east end of the field and just beyond the treeline was a tree-covered hill which descended about 50 ft at a slope of about 50°. The trees on the hillside were about 80 to 100 ft tall. At the bottom of the hill was an 8 - 10 ft wide creek. The east bank of the creek was treelined and beyond the trees were to more open fields (lower fields) which were divided by a row of small trees and brush. The wreckage was

scattered in the upper field, down the hillside, and into the lower fields. The entire wreckage path was about ¼ mile in length.

The wreckage path in the upper field was scattered after the initial terrain impact point and along a magnetic heading of about 110°. The first pieces of wreckage along the path were the nose baggage doors. The upper left engine cowling and the rudder were the next major pieces of wreckage along the path followed by the outboard section of the left wing, the elevators, and the outboard section of the right wing. Both outboard flaps and the right wing inboard flap were found in the upper field along with pieces of the left inboard flap.

The vertical stabilizer, the cockpit wiring bundle, and the cockpit flight controls including the throttle quadrant were the major pieces of wreckage found on the hillside.

The wreckage located in the lower field consisted of the fragmented pressure vessel, the aft pressure bulkhead, the left and right engines, both propellers, avionics, pieces of the instrument panel, all three-landing gear, and a section of the left wing between the aileron and the engine. The left engine was the main piece of wreckage that was located furthest from the initial impact in the upper field.

G. SUMMARY OF AIRCRAFT EXAMINATIONS[1]

Airframe – Cessna 441, s/n 441-0065

The fuselage was fragmented into numerous pieces, most of which were located at the bottom of the hill. The aft pressure bulkhead was in one piece and located on the east side of the creek. The cockpit wiring, and partially destroyed flight controls were at the bottom of the hill. The aileron sector which would have been in the cabin, was not found. The throttle quadrant was in the cockpit wiring bundle. The power and condition levers were in the full forward position. Most of the destroyed cockpit instrumentation was found scattered in the lower field. The smell of jet fuel was present throughout the accident site.

Left Wing – The section of the wing, outboard of the engine nacelles, was in the upper field as was pieces of the separated wingtip. The separated outboard flap and pieces of the inboard flap were in the upper field. The aileron was separated from the wing. The aileron wing bell crank was pulled past the stops and did not exhibit evidence of hammering. The aileron trim tab remained attached to the aileron and the actuator was attached to the tab. The actuator was measured, and the measurement equated to about 5° tab trailing edge up. The inboard section of the wing was fragmented, and those fragments were in the lower field.

Right Wing - The section of the wing, outboard of the engine nacelles including the attached wingtip, was in the upper field. The aileron remained attached to the outboard section of the right wing and the aileron cables remained attached to the bellcrank. Both the outboard and inboard flaps were separated from the wing and were in the upper field.

[1] Directions related to accident site placement and component damage/deformation are with respect to an intact airframe unless otherwise noted.

Pieces of the trailing edge, inboard section of the wing were in the upper field. The aileron cables were connected at the control yoke chain in the cockpit area. The inboard section of the wing was fragmented, and those fragments were in the lower field.

Empennage – The horizontal stabilizer and elevator assembly was separated at fuselage station 386. The right elevator weight was separated and the right elevator which remained attached to the stabilizer, was bent midspan. The left elevator remained attached to the horizontal stabilizer. The elevator push/pull tubes were connected to the bellcrank and to the elevator with the cables connected to the bellcrank. Both elevator trim tabs remained attached and were in a slight trailing edge down position. The trim tab actuators were extended equally on the left and right sides. The actuator was measured at 0.8 inches which is beyond its normal travel limits. The elevator trim chain was connected and free to move in the cockpit area. The electric control box for the elevator was not located in the wreckage.

The rudder which was separated into two pieces, was separated from the remainder of the empennage. The upper half of the trim tab was separated from the rudder and was located near the rudder. The actuator rod remained attached to this separated piece of the trim tab. The control cables remained attached to the rudder pedals in the cockpit area. The rudder trim actuator was located, and the actuator was extended such that the threads at the bottom of the actuator were visible. The total extension of the actuator was measured at 3.5 inches which is beyond its normal extension limit of 3 inches. The actuator was bent at a point located about 1.5 inches above the actuator housing. The distance above the bend was measured at 2 inches. A 2-inch extension of the actuator equates to a rudder trim position of 5° trailing edge left, and a 2.4-inch extension equates to a 2° trailing edge right trim tab position.

The vertical stabilizer was separated from the empennage and was found in multiple pieces on the hillside.

All the flight control cables exhibited overload separation signatures.

Landing Gear – One main landing gear actuator was in the wreckage in the extended position and the structure with the actuator's uplock was not located. The other main landing gear actuator was not intact.

Engines:

Both engines were separated from the airplane structure. They were both found in the lower field with the left engine being the furthest piece of wreckage from the initial impact point in the upper field.

Honeywell TPE331-10N, s/n P77135C – Left Engine

The engine mounts were damaged but remained attached to the engine. The engine was removed from the field and it was noted that the oil tank was ruptured as oil was leaking from the engine. Dirt was visible in the exhaust duct and some metal spray was present on the third turbine rotor. The third rotor was intact and undamaged. The propeller pitch control was pushed aft from the gearbox and the fuel control was missing. The fuel pump was broken in half with half of the pump attached to the gearbox. The remainder of the fuel pump was attached to the fuel control assembly which was separated from the engine. The fuel control linages were broken. Impact damage was visible in the

combustor plenum and the compressor housing. The inlet structure remained attached to the engine but was bent inward with dirt compacted in the inlet. The combustor planum and the compressor housing were dented and wrinkled. The starter adapter was broken from impact damage. The starter, the propeller governor, and the fuel controller were in the debris field.

Honeywell TPE331-10N, s/n P77425C – Right Engine

Some aircraft structure remained attached to the engine. The engine mounts were damaged but remained attached to the engine. The engine was removed from the field and it was noted that the oil tank was ruptured as oil was leaking from the engine. Dirt was visible in the exhaust duct and a few specs of metal spray were present on the third turbine rotor. The third rotor was intact and undamaged. The propeller pitch control was pushed aft from the gearbox and the fuel pump was broken in half with half of the pump attached to the gearbox. The remainder of the fuel pump remained attached to the fuel control assembly. The control linkages remained attached and held the fuel control to the engine. The gearbox housing was cracked about 180 ° at the compressor housing flange. The combustor planum and the compressor housing were dented and wrinkled. The compressor inlet was packed with dirt and mud.

Propeller Assemblies
Left Propeller Hartzell HC-E4N-5A s/n HE123

All four blades remained attached in the hub and were free to rotate. The spinner which was crushed, remained attached to the propeller with the beta tube exposed through the spinner. Two of the propeller blades were bent rearward and twisted with the tips bent forward. The third blade was bent rearward nearly 90° starting near the hub. The fourth blade was bent rearward nearly 90° with the outboard 2/3 of the blade separated.

Right Propeller Hartzell HC-E4N-5A s/n HE124

All four blades roots remained attached in the hub and were free to rotate. The spinner which was crushed, remained attached to the propeller with the beta tube exposed through the spinner. One propeller blade was twisted and bent rearward. The second blade was bent rearward starting near the hub with the outboard portion of the blade twisted. The third blade was missing the outboard half of the blade and the inboard half of the blade was twisted. The fourth blade consisted of only the root of the blade. The remainder of the blade had separated.

Several sections of propeller blades were in the lower field.