



The National Transportation Safety Board

Office of Aviation Safety
Central Region
Memorandum for the Record
Airframe Examination
Findings
CEN18FA232
Enid Oklahoma
June 19 2018

General

The aircraft wreckage was found in an open flat wheat field north of the intersection of Hwy 45 and Garland Rd near Enid, OK. Aircraft was found about 470 feet north of a 405-foot tall (AGL) transmission tower. According to the FAA Inspector who initially responded to the accident scene, the tower company identified that the top 50 feet of the tower was missing. The tower remained standing but was later taken down by the tower company on the evening of June 19, 2018. Evidence at the accident site showed that the airplane impacted the tower. Approximately 50 feet of dark orange tower structure and two approx. 5/8" diameter guy wires were intertwined with wreckage. After impact with the tower, the wreckage and ground scars were consistent with a nose down vertical impact. There was no horizontal ground scarring or significant debris trail leading to the wreckage. Most of the wreckage was found collocated with the fuselage. The engine wreckage was found separately approximately 325 ft. northeast of the fuselage.

Airframe Examination Findings

Fuselage/Cockpit

The fuselage was found inverted. The area of the fuselage forward of the cockpit was crushed aft. The cockpit was found with no decrease in the occupiable space. The seat was intact and the pilot restraints were found buckled except for the 5th point (crotch strap). The restraints had been cut by first responders at the shoulder harness and righthand lap belt. The airplane was equipped with AmSafe Inflatable Restraints (airbags), which had deployed. The powerplant control levers (power, propeller, and condition levers) were found in the full forward position. The airspeed indicator was stuck at 94 mph.

Landing Gear

The landing gear was all found intact and remained installed on the aircraft.

Wings

Both wings were found in place on the fuselage. The center splice wing connection remained intact. The rear spar connections to the fuselage were damaged due to impact forces. Both wings exhibited severe fore-to-aft crush damage. The wing leading edges were crushed aft to the main spar. The aircraft was equipped with 170-gallon fuel tanks (combined) in the wings. Both fuel tanks were found ruptured and no fuel was found remaining in the tanks.

Empennage

The rudder and vertical fin were found damaged but intact on the aircraft. The damage to these components was accompanied by orange paint transfer. The left elevator and horizontal stabilizer had minimal damage. The right horizontal stabilizer exhibited impact and crush damage in multiple directions. The right elevator had

partially separated from the stabilizer with tear damage at each hinge location. The hinge hardware remained installed in the hinge. The separated portion of the elevator was found near the fuselage wreckage.

All flight control surfaces were located with the primary wreckage and in their expected locations within the wreckage. Flight control continuity was established to the extent possible by the condition of the wreckage.

The elevator controls are manually operated by steel and aluminum pushrods connecting the control stick to the elevator control horns through two control idlers. The control stick showed impact damage and was attached to its mounts in the cockpit. From the control stick, the controls were found to be continuous to the elevator control horns. There was damage to the elevator control horns and the centerline pivot bolt was not found. However, the holes where the bolt were installed were found to be elongated.

Rudder Controls

The rudder controls are manually operated by a pair of stainless-steel cables running directly from the rudder pedal assemblies to the rudder control horns. Both rudder cables remained attached at the rudder control horn. The cables were traced forward and found to be continuous to the rudder pedal adjustment attach points.

Aileron Controls

The aileron controls are manually operated by steel and aluminum pushrods connecting the control stick to the aileron control horns through a torque tube and multiple bellcranks and idlers. In addition, the AT-502B ailerons incorporate a drooping feature that lowers both ailerons in conjunction with deployment of the flaps. The primary aileron controls were heavily damaged due to impact forces. Connections were found to be continuous, except for separations on both sides where the wings meet the fuselage. These fractures were found to be consistent with bending/tensile overload. All of the rod ends and their respective installation hardware were found to be present and installed. The aileron drooping system was found to be damaged but fully continuous.

Flap System

The flap control system was found to be continuous and all control system hardware was found to be in place. The extension of the flap actuator was measured and found to be about 3/8". This corresponds to a flap position of approximately 1°, which is essentially flaps fully retracted.

Engine/Propeller

The engine and propeller hub were found at the far end of the debris field. The propeller blades were found in many pieces located throughout the debris field. Many of the propeller blades exhibited evidence of wire strike and orange paint transfer.

The engine was confirmed to be Pratt & Whitney PTGA-34AG serial number PCE-PN0134. The engine was separated at the "C" Flange. Both portions of this engine were found adjacent to each other. Heat marks, circular scoring, and fractured turbine blades suggested that the engine was operating under power.

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