

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

**SUMMARY OF AIRCRAFT EXAMINATION**

-- CEN19FA210 --

**A. ACCIDENT**

Location: Chebanse, Illinois  
Date: July 5, 2019  
Time: 1358 central daylight time  
Aircraft: Beech A36 (s/n E-1875), N1809S

**B. PARTICIPANTS**

Timothy Sorensen  
Senior Aviation Accident Investigator  
National Transportation Safety Board  
Denver, Colorado

Ricardo Asensio  
Senior Air Safety Investigator  
Textron Aviation  
Wichita, Kansas

Mike Council  
Air Safety Investigator  
Continental Aerospace Technologies  
Mobile, Alabama

**C. ACCIDENT SUMMARY**

On July 5, 2019, about 1358 central daylight time, a Beech A36 airplane, N1809S, was substantially damaged during a forced landing following an in-flight loss of engine power near Chebanse, Illinois. The pilot sustained serious injuries, one passenger sustained minor injuries, and one passenger was fatally injured. The airplane was registered to and operated by private individuals as a Title 14 *Code of Federal Regulations* Part 91 as a personal flight. Visual meteorological conditions prevailed at the time of the accident, and the flight was not operated on a flight plan. The flight originated from Smyrna Airport (MQY), Smyrna, Tennessee, about 1135 and was destined for Bolingbrook's Clow International Airport (1C5), Bolingbrook, Illinois.

## Summary of Aircraft Examination

### E. DETAILS OF AIRCRAFT EXAMINATION

A post-accident examination was conducted at the accident site by the NTSB investigator-in-charge with the assistance of technical representatives from Textron Aviation and Continental Aerospace Technologies as parties to the investigation. After the examination, the airplane was recovered by AMF Aviation LLC, Springfield, Tennessee.

### F. DESCRIPTION OF ACCIDENT SITE

The accident site was located in a wheat field approximately 0.1 mile north of County Road 3300N and 0.3 mile east of County Road 1600E in Iroquois County at an elevation of about 637 ft. The airplane came to rest upright on an approximate 210° heading at approximate coordinates of 40.9919° north / 87.8356° west.

The impact/debris path was approximately 75 ft long. Ground depressions consistent with impact from the main landing gear wheels were located about 50 ft from the airplane. The wheat field was burned and scorched in an area behind the left wing. The burned area was about 27 ft by 12 ft. Surrounding the burned area, the scorched area measured approximately 45 ft by 24 ft. The wheat field was also burned in an area below and behind the right-wing tip, which measured about 33 ft by 18ft.

### G. SUMMARY OF AIRCRAFT EXAMINATION<sup>1</sup>

#### **Airframe – Beech A36 (s/n E-1875)**

The fuselage nose structure, including the engine cowling, was partially separated forward of the firewall. The firewall was deformed. The lower fuselage structure common to the firewall and to the cockpit floor was deformed upward. The fuselage exhibited localized deformation and buckling to the aft cabin doors. The aft fuselage appeared to be intact. The forward and aft cabin doors remained attached. The left- and right-over-wing emergency exits were secured; although, the plexiglass on the right exit window was fragmented. The seats were intact and attached to the seat tracks. All lap and shoulder belts remained attached to their anchor points.

The left wing remained attached to the fuselage and was damaged over the entire span. The inboard portion of the wing was deformed upward consistent with excessive upward impact loading to the left main landing gear. The landing gear was extended. The main wheel and lower strut had separated and were located adjacent to the aft fuselage. The left aileron and flap remained attached to the wing. Aileron movement was restricted consistent with the adjacent wing damage. The inboard half of the left tip fuel tank remained attached to the wing. The outboard half was separated and fragmented. The left wing exhibited minor sooting but no evidence of fire damage was observed. Both the main and tip fuel tank caps were securely installed. The left main fuel tank appeared to be empty. No fuel was present when the wing was positioned with the sump at a low point and the valve was opened.

The right wing remained attached to the fuselage. It exhibited minor deformation and buckling over entire span. The landing gear was extended. The main wheel, lower strut and drag link were separated and located about 18 ft from the wing tip. The right aileron

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

## Summary of Aircraft Examination

### G. SUMMARY OF AIRCRAFT EXAMINATIONS *(continued)*

and flap remained attached to the wing. The inboard portion of the tip tank remained attached to the wing. The forward and outboard portions, including the fuel tank cap, were separated and fragmented. The tip tank and outboard portion of the wing exhibited extensive fire damage. The main fuel tank cap was securely installed. Approximately 25 gallons of fuel were recovered from the right main fuel tank.<sup>2</sup> A sample exhibited a light blue tint and appeared to be uncontaminated.

The empennage remained attached to the aft fuselage and appeared to be intact. Minor sooting was present of the vertical stabilizer. The elevators and rudders remained attached and exhibited the full range of movement. The elevator trim tabs remained attached.

Flight control continuity was confirmed from each control surface to the corresponding cockpit controls. The control wheels remained attached to the control column and were free to rotate. Control column movement was limited consistent with the fuselage damage. Elevator trim continuity was confirmed to the cockpit area. The left and right elevator trim actuator extensions were 1-3/8 inches.<sup>3</sup>

Both wing flaps appeared to be retracted. Flap control continuity was confirmed. The left flap actuator extension was 1-3/4".<sup>4</sup> Both the cockpit flap handle and position indicator corresponded to a retracted position.

The landing gear motor appeared intact. The left and right gear linkage remained attached to the motor extension/retraction arms. The motor position corresponded to a landing gear extended position.

The fuel selector was in the left position. The selector remained secured to the mounting bracket and all fuel lines were securely attached to the selector. A small fuel sample recovered from the selector exhibited a light blue tint and was free of sediment and water. The selector was disassembled; no anomalies were observed. The electric fuel pump remained secured to the airframe and the fuel lines were securely attached to the pump. The pump ran when electrical power was applied to the unit.

The instrument panel exhibited minor displacement consistent with the forward fuselage damage. All instruments and avionics remained in position. The left fuel quantity indicator glass was broken; otherwise, the instruments appeared undamaged. The left fuel indicator needle was trapped behind the broken glass about 5/8 full. The right indicator was intact, and the needle was at "E" (empty).<sup>5</sup> The auxiliary fuel pump switch was in the off position. The switches corresponding to the left and right tip tank transfer pumps were off and on, respectively. The battery and alternator switches were off. The magneto selector was in the off position. All electrical switches were off with exception of the strobe light switch which was on. The tachometer indicated 4,135.08 hours.

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<sup>2</sup> The remaining fuel was drained into a 23" diameter barrel and measured 14" in depth.

<sup>3</sup> The trim actuator extensions corresponded to a neutral tab position.

<sup>4</sup> The flap actuator extension corresponded to a retracted (flap up) position.

<sup>5</sup> An empty fuel level indication is normal when electrical power is not available to the system.

## Summary of Aircraft Examination

### G. SUMMARY OF AIRCRAFT EXAMINATIONS *(concluded)*

#### **Engine – Continental IO-520-BB (s/n 274766-R)**

#### **Propeller – Hartzell PHC-C3YF-1RF (s/n EE324A)**

The engine was partially separated from the airframe. Three engine mount attachment fittings were intact; the fourth was fractured. The fuselage nose structure common to the engine attachment fittings was partially separated from the firewall. The engine cowling was partially separated. Engine control cable continuity was confirmed.<sup>6</sup> The engine assembly appeared intact and undamaged, with exception of the induction wye tube and forward balance tube which exhibited damage consistent with impact forces.

The main fuel hose from the airframe fuel selector to the engine driven fuel pump was removed; no fuel was observed. The hose from the fuel manifold to the mixture control was removed; minimal fuel was observed. The engine driven fuel pump was removed, and the drive coupling was intact. The pump drive rotated smoothly. No residual fuel was expelled when the pump was operated manually.

The upper spark plugs were intact and exhibited normal operating signatures. No combustion deposits were present on the insulators or ground electrodes. The plugs featured three grounding electrodes. No manufacturer name or part number were observed on the plugs. Borescope examination was unremarkable; all intake and exhaust valves were intact and exhibited normal combustion signatures.

The engine examination was concluded pending further examination and testing at the engine manufacturer's facility.<sup>7</sup>

The propeller remained attached to the engine. The spinner was crushed and partially formed to the propeller hub. The hub appeared intact and all three blades were retained. Blade "1" was bent aft approximately 30° near midspan. Blade "2" was rotated leading edge aft (clockwise) within the hub. The blade appeared to exhibit shallow S-bending. Blade "3" was bent aft about 15° near midspan. The blades appeared to be otherwise intact. The propeller assembly was not disassembled.

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<sup>6</sup> The engine control cables were cut to facilitate recovery.

<sup>7</sup> The fuel mixture valve/throttle body, including the forward induction wye, was removed to prevent damage during transport.