

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



ERA23FA238

AIRFRAME EXAMINATION

May 22-23, 2023

A. ACCIDENT

Location: Rougemont, NC
Date: May 21, 2023
Time: 1115 EDT
1515 UTC
Airplane: Beech V-35, N272S

B. INVESTIGATIVE TEAM

Investigator In Charge Lynn Spencer
National Transportation Safety Board
Washington, DC

FAA Party Coordinator Tim McQuain
Federal Aviation Administration
Greensboro, NC

FAA David Laycock
Federal Aviation Administration
Greensboro, NC

TEXTRON Ernest Hall
Textron Aviation
Wichita, KS

C. SUMMARY

The airframe examination occurred at the accident site on May 22-23, 2023. The airframe examination revealed no anomalies or malfunctions that would have prevented normal flight. Observation of the engine revealed a catastrophic failure that would have prevented normal engine operation.

D. DETAILS OF THE AIRFRAME EXAMINATION

1.0 Wreckage Description and Photos

The airplane as first observed was upright and oriented 126.2° true in an small area of pine trees between two large fields. The fuselage and cockpit had been consumed by the post-crash fire. The debris field was limited to the immediate area where the wreckage came to rest. The wings remained attached to the main wing spar and the empennage remained intact and attached to the fuselage via the lower fuselage skin and various cables. The left wing, with flap and aileron attached at all connection points, was mostly intact. The inboard half of the flap was thermally damaged. The left main landing gear was retracted. The outer section of the left wing was lodged under the berm of a fallen tree. The left fuel tank was intact and contained a liquid substance with a smell and color consistent with 100LL fuel. The right wing exhibited significant impact damage, and was s-shaped, with an impact fracture between the aileron and flap. The trunk of the top portion of a pine tree was lodged in the wing fracture, consistent with tree impact. The leading edge of the wing was oriented toward the ground. The wing root was thermally damaged, and the fuel tank was breached and void of fuel. The landing gear was hanging. The engine remained attached to the fuselage at the engine mounts, and the propeller hub remained attached to the engine crankshaft propeller flange. The three propeller blade roots remained attached to the propeller hub; however, the portions of recovered blades were either thermally or impact damaged.



Photo 1 - View of wreckage from front



Photo 2 - View of wreckage from right rear



Photo 3 - View of the left wing.



Photo 4 - View of left wing fuel tank with fuel cap removed.



Photo 5 - View of the empennage and burned fuselage.



Photo 6 - View of fractured right wing with thermal damage



Photo 7 - View of landing gear mechanism indicating that gear were in the UP position



Photo 8 - View of fuel selector valve in closed position



Photo 9 - View of engine, propeller hub, and fractured propeller blade



Photo 10 - View of top of engine with holes in crankcase above cylinder Nos. 3 and 4



Photo 11 - View of hole of crankcase at cylinder No. 4 with connecting rod exposed



Photo 12 - View of thermally damaged cockpit and instruments



Photo 13 - View of left front seatbelt latch

2.0 Airframe examination

The airplane was a low-wing configuration with retractable landing gear. It was an all-aluminum design with a V-tail, equipped with combination elevator-rudders called "ruddervators." The airplane was equipped with a Continental IO-520-BA engine, SN 569077, and a 3-bladed MT Propeller, model MTV-9-D.

The aircraft, propeller, and engine logbooks were not available during the onsite examination. A review of the aircraft's FAA Airworthiness records revealed the following STC's and alterations:

Date	STC #	Description
01-29-20	ST11172SC	Installed: NavWorx ADS600-B UAT Transceiver Automatic Dependent Surveillance-Broadcast Unit P/N 200-0012-02-08
04-15-19	SA03286CH	Installed: Electroair Electronic Ignition System RH Bendix Mag P/N BL-349260-6
	SA04032CH	Installed: Electroair Rocker Switch
12-18-18	SA82987956H	Installed: Electric Air Ignition System EIS-61000
06-11-10	SA01880CH	Installed: Alpha Aviation Inc. Three Point Torso Restraint System Model 3RS-114FS Fixed restraint
03-18-09	SA02535CH	Installed: MT Propeller Model MTV-9-D S/N 080970
07-10-08	SA02268CH	Installed: Airwolf Filter Corp. Air Oil Separator
03-15-08	SA01933LA	Installed: Garmin GNS 430W GPS WAAS Com/NAV/ILS Receiver, and Garmin A-35 GPS Antenna
04-27-07	SA1176SO	Installed: D'Shannon Products Company Aileron and Wing Flap Gap Seals
04-04-07	SA00035DE	Installed: General Aviation Modifications, Inc. #6 Cylinder Baffle/Cooling Louver System
02-26-07	SA01669CG	Installed: Challenger Air Filter Kit P/N CP-2003
07-12-06	SA2586NM	Installed: J.P. Instrument EGT-701 Temperature Indicator and Probes
	SA6036SW-D	Installed: S-TEC System 60-2 Autopilot and GPSS Roll Steering
	SA02154AK	Installed: Garmin MX20 Multifunction Display
	SA01487SE	Installed: Garmin GDL 69 Unit and Garmin GA 56 Antenna
06-01-00	337	Removed: Passenger Tour System that was installed under FAA 337 dated 05-31-91

Date	STC #	Description
06-08-99	337	Installed/Replaced: Pilot Side Window with thicker window per report 97-0001 dated 08-27-97
	337	Installed/Replaced: Windshield per report 0012 dated 02-05-99 and D'Shannon Beech Mods DWG D0001. Used L.P. Aero Windshield #981.375
05-31-91	337	Installed: Passenger Tour System
04-04-91	SA1545GL	Installed: McCoy Avionics Corporation Frequency Stability Mod
11-30-87	337	Installed: Trans Cal Model D120-P2-T Blind Encoder S/N 58089
09-03-87	SA522SW	Installed: Alcor EGT System
03-02-87	SA71GL	Installed: Air Filter Bracket
	SA11GL	Installed: Cleveland Wheels and Brakes
07-17-70	337	Installed: Narco At-5A Transponder Panel Unit, Narco At-5A Transponder Remote Unit, and King Transponder Antenna K 27
03-22-68	337	Installed: King KCP-750 Transponder, King KFS 570 Control Head, and King KA-27 Antenna

12-13-66	337	Installed: Narco UGR-2 Glideslope receiver, Narco VOA-9 Converter Indicator, ARC A326A Antenna, Bullock Airguard Anti-Collision Beacon Model 1000, and Bullock Airguard Anti-Collision Beacon Model 1400
12-09-65	337	Installed: Narco UDI-4 DME, Narco UDA-3 DME Antenna, and Alcor Exhaust Gas Temperature Indicator

Powerplant and Propeller

The engine remained partially attached to the engine mounts. On top of the engine at cylinder Nos. 3 and 4 were two holes in the crankcase. There was a single magneto per an STC. The vacuum pump drive shaft was thermally damaged. The engine exhibited impact and thermal damage. The propeller hub remained attached to the engine at the engine crankshaft propeller flange. The STC 3-bladed wood/composite propeller blades were impact and thermally damaged.

Flight Controls

All primary (ruddervators and ailerons) flight control surfaces with their appropriate trim tabs and flaps were accounted for at the wreckage examination. Continuity of all primary flight control cables were confirmed from the cockpit to their respective flight control surface. Continuity of the elevator trim control cable was confirmed from the cockpit to the flight control trim surfaces. Continuity was confirmed by either visual and/or pulling the cable at one end to see the other same cable end and/or control surface move.

The elevator trim actuator extension was measured and found to be approximately 3/4 inches, which corresponds to approximately 5° trim tab trailing edge down.

The flap flexible drives cable continuity was confirmed from the flap drive motor to the flap actuators.

The right flap actuator remained attached to the wing aft spar and the flap attachment. The flap actuator extension was measured and found to be approximately 1 3/4 inches, which corresponds to approximately UP flap position. The left flap actuator was thermally damaged.

Cockpit Controls

The cockpit was destroyed. The instrument panel, navigation instruments, communication, and navigation radios, and electrical, lighting, and ignition switches were thermally damaged. All engine instruments and controls were thermally damaged.

Seats and Seatbelts

The cockpit and cabin seats were thermally and impact damaged. The 3-pt seatbelts were burned in the postcrash fire; however, the pilot's seatbelt latch remained latched.

Landing Gear

The landing gear motor/actuator was thermally damaged exposing the internal steel gears. The left main and nose landing gears remained in their stowed positions, and the right main landing gear was hanging in the wreckage.

Airframe Fuel System

The fuel selector handle was in the off position, and the fuel selector valve was in the off position. The fuel strainer screen, strainer bowl, and the boost pump switch were thermally damaged.

Other Systems

The emergency locator transmitter (ELT) was destroyed by fire. A phone conversation with the Air Force Rescue Coordination Center revealed that the ELT had sent an emergency signal at 1115 EDT, and that the Coordination Center had made calls to the various authorities to advise them of the signal. The Environmental System Controls and Icing System/Switches were thermally damaged. The oxygen system was thermally damaged.

3.0 Recovery Information

After the airframe examination, the wreckage was loaded onto a trailer on May 23, 2023, and transported to Atlanta Air Salvage in Griffin, Georgia. The engine will be crated and shipped to Continental Engines in Mobile, Alabama for examination.