

National Transportation Safety Board

Office of Aviation Safety

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ENGINE AND ELECTRICAL SYSTEM EXAMINATION

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A. ACCIDENT

Location: Athens, Georgia
Date: 11/3/2022
Time: 1855 EST
2355 UTC
Airplane: N101DC, Beech 95-B55

B. ENGINE AND ELECTRICAL SYSTEM EXAMINATION

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C. SUMMARY

On November 3, 2022, about 1855 eastern standard time, a Beech 95-B55 airplane, N101DC, was substantially damaged when it was involved in an accident at Athens, Georgia. The commercial pilot was not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 business flight.

The pilot reported that he was returning to Greenville Downtown Airport (GMU), Greenville, South Carolina in dusk conditions. He was at 7,000 ft mean sea level, in cruise flight, when he noticed electrical problems with the airplane. He recalled that some of the displays on his navigation system were lost, he was hearing ATC intermittently on the radios, and his transponder was not operating normally. He contacted Atlanta Approach and the controller informed him that Athens Ben Epps Airport (AHN), Athens, Georgia was 11 miles away. He set up for an approach to runway 27. He then noticed that his engines were losing power and he needed full throttle to maintain safe airspeed. He attempted to lower the landing gear with the alternate extension handle; however, he had difficulty accessing the handle and moving it. He landed the airplane on runway 27 and it skidded to a stop on the runway with the landing gear retracted.

D. DETAILS OF THE EXAMINATION

1.0 Accident Site

The wreckage came to rest on runway 27 at AHN at coordinates 33.94924, -83.32410.

2.0 Airframe Examination

The lower fuselage skin was scraped and there was exposed damage to lower fuselage structure. All four of the propeller tips were bent aft due to runway contact.

When investigators examined the cabin area, the carpet adjacent to the landing gear emergency extension handle had been moved. Recovery personnel reported that they used the emergency extension handle to lower the landing gear when removing the wreckage from the runway and it operated normally.

3.0 Engine and Electrical System Examination

On May 1, 2023, the investigation team troubleshooted the aircraft's alternator system. Upon arrival, the wreckage was stored behind hangars at the airport; it was noted that the aircraft was on its extended landing gear and parked on the grass. The team began a visual inspection, basically a preflight inspection, documenting the aircraft with photographs. Once the exterior of the aircraft was inspected/documented, the same process was performed inside the aircraft.

The nose door, on the right side of the aircraft, was opened and a floor panels were removed to access the aircraft battery. After sitting parked for six months, the aircraft battery was found to be charged to 6 to 13 volts. A portable charger was hooked up to the battery to charge it. While the battery was charging, both engine cowlings were removed to inspect both engines for operation: FOD in the intake, loose fuel fittings, etc. A bird nest with five young birds in the nest was removed from the right engine intake duct. The intake filter was removed and cleaned of debris from the bird nest. The left engine intake was clear. Both engine cowlings were reinstalled on their respective engine. The aircraft's cockpit battery switch was turned to the ON position to verify there was fuel in the wing fuel tanks. Both fuel indicators needles were in the yellow band.

The right engine was primed and started. The right engine started on the first attempt and was operated at idle to verify good engine indications: fuel flow, fuel pressure, oil pressure, oil temp., etc. Then the engine was operated up to about mid-power then back to idle, then again back to mid-power for about 2 to 3 minutes before the engine power was pulled back to idle. No abnormalities were noted except for vibration due to both propeller blades tips bent/curled aft from the gear-up landing. While the engine was up on power, the right alternator switch was turned on; however, the load meter showed no current load, and the right alternator (red) light was illuminated.

While the right engine was at idle, the left engine was primed and started. It started on the second attempt. The engine was operated up to about mid-power then back to idle, then again back to mid-power for about 2 to 3 minutes before the engine power was pulled back to idle. No abnormalities were noted except for vibration due to both propeller blades tips bent/curled aft from the gear-up landing. While the engine was up on power, the left alternator switch was turned on; however, the load meter showed no current load, and the left alternator light was illuminated.

Both engines were operated up to 2,100 RPM for about 2 to 3 minutes with no abnormalities noted except for the vibration from the bent/curled propeller blade tips.

The right engine was shut down to access to the battery. The portable battery charger was removed, and a voltmeter was connected to the battery post to verify if the left engine alternator was operating and supplying voltage to charge the battery. It was noted that the left engine alternator was not supplying voltage to the battery. The left engine was shut down and the applicable aircraft alternator electrical wiring diagram was reviewed. After troubleshooting, a 2-amph fuse for the left engine alternator system was found open (blown). A replacement 2-amph fuse was installed. The portable battery charger was reinstalled on the battery, the left engine primed, and the engine started. The portable battery charger was disconnected from the battery post. The left engine alternator switch was turned on and 28 to 29 volts were read on the voltmeter at the battery posts. The left engine alternator switch was turned off and voltage at the battery post read 6 to 13 volts. The left engine alternator was turned back on and voltage at the battery post read 28 to 29 volts. The left engine was shut down and secured.



Photo 1 - Open 2-amp Fuse (Courtesy Textron Aviation)

Battery extension cables were installed on the battery post and routed outside and underneath the nose to the left side of the aircraft. The battery/nose compartment door was closed. The portable battery charger was connected to the battery extension cables and the right engine was primed and started. After the aircraft was started, the portable battery charger was disconnected from the battery extension cable and the voltmeter was connected to it. The right engine alternator switch was turned on but only 6 to 13 volts was read on the voltmeter. The right engine alternator switch was turned off and the right engine was shut down and secured. After troubleshooting and reviewing the applicable aircraft alternator electrical wiring diagram, the right alternator field wire was found separated from the alternator connection. The field wire was reconnected to the alternator and the right engine was primed and started. The right alternator switch was turned on and 28 to 29 volts was read on the voltmeter. The alternator switch was again turned off and 6 to 13 volts was read on the voltmeter. The right alternator switch was turn back on and 28 to 29 volts were read on the voltmeter. The right alternator switch was turned off and the right engine was shut down and secured.



Photo 2 - Separated Alternator Field Wire (Courtesy Textron Aviation)

Submitted by:

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