



Aviation Investigation Final Report

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| Location: | Atlanta, Georgia | Accident Number: | ERA23LA127 |
| Date & Time: | February 16, 2023, 14:31 Local | Registration: | N103AV |
| Aircraft: | Piper PA-28-181 | Aircraft Damage: | Substantial |
| Defining Event: | Fuel related | Injuries: | 1 Serious, 1 Minor |
| Flight Conducted Under: | Part 91: General aviation - Instructional | | |

Analysis

Before takeoff, the student pilot and flight instructor performed a preflight inspection and an engine run-up that included checking the carburetor heat before taxiing the airplane into position; they noted no anomalies. After takeoff, about 200 ft above ground level, the engine lost total power. The flight instructor initiated a left turn and the airplane impacted the ground near a parallel runway, resulting in substantial damage to the wings and fuselage.

Postaccident examination of the engine revealed no evidence of preimpact mechanical malfunctions or failures that would have precluded normal operation. The weather conditions at the time of the accident were conducive to the formation of serious carburetor icing at glide (idle) engine power settings. Furthermore, the engine data monitor indicated that the carburetor temperature decreased to 38°F just before the loss of engine power. Thus, it is likely that during the taxi and engine run-up, a period during which the engine would typically be operating at low power, carburetor ice formed and subsequently resulted in a total loss of engine power during the initial climb.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The flight instructor's failure to effectively utilize carburetor heat, which resulted in a total loss of engine power during initial climb due to carburetor ice that formed during the engine run-up and taxi.

Findings

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| Personnel issues | Lack of action - Instructor/check pilot |
| Environmental issues | Conducive to carburetor icing - Decision related to condition |

Factual Information

History of Flight

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| Initial climb | Fuel related (Defining event) |
| Emergency descent | Controlled flight into terr/obj (CFIT) |

On February 16, 2023, about 1431 eastern standard time, a Piper PA-28-181, N103AV, was substantially damaged when it was involved in an accident at Dekalb-Peachtree Airport (PDK), Atlanta, Georgia. The flight instructor sustained serious injuries and the student pilot sustained minor injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

According to the student pilot, he and the flight instructor conducted a preflight inspection, start up, taxi, and engine run-up, which included two checks of the carburetor heat system. Then, once they received their takeoff clearance, they began the takeoff roll on runway 21R and, after rotation while around 200 ft above ground level, the engine started to “sputter.” The flight instructor took over control of the airplane as the engine lost total power. The flight instructor stated that after the engine lost total power, he initiated a left turn to avoid colliding with structures.

The airplane impacted the ground on the right side of runway 3R, resulting in substantial damage to the fuselage and wings.

Postaccident examination of the engine revealed that internal and valvetrain continuity was established when the crankshaft was rotated by hand. Examination of the cylinders with a lighted borescope revealed no anomalies. The fuel inlet screen and fuel filter were examined and no debris was noted. The carburetor was disassembled, residual fuel was in the carburetor bowl, and no anomalies were noted with the system. The engine-driven fuel pump was actuated by hand and functioned normally. The engine oil, engine oil filter, and engine oil pickup screen were all absent of debris. Both magnetos produced spark at all towers.

Data downloaded from an Electronics International MVP-50P engine data monitor began at 1419 and ended at 1434. The data indicated that carburetor temperature decreased to 40°F and then increased twice before the takeoff. Then, during the takeoff, the rpm increased to 2,600 rpm and the carburetor temperature decreased to 38°F for about a minute. The fuel flow at the same time increased, surged three times, and then decreased to 0. Furthermore, the engine rpm remained around or below 1,500 rpm for the majority of the accident flight except two times, when the rpm increased to 2,000 rpm and 2,600 rpm respectively.

At 1444, the weather reported at PDK included a temperature of 23°C and a dew point 14°C. The calculated relative humidity at this temperature and dewpoint was 57%. Review of the icing probability chart contained within Federal Aviation Administration (FAA) Special Airworthiness Information Bulletin CE-09-35 revealed the atmospheric conditions at the time of the accident were "conducive to serious icing at glide [idle] power."

According to FAA Advisory Circular (AC) 20-113, "To prevent accidents due to induction system icing, the pilot should regularly use [carburetor] heat under conditions known to be conducive to atmospheric icing and be alert at all times for indications of icing in the fuel system." The AC recommended that when operating in conditions where the relative humidity is greater than 50%, "...apply carburetor heat briefly immediately before takeoff, particularly with float type carburetors, to remove any ice which may have been accumulated during taxi and runup." It also stated, "Remain alert for indications of induction system icing during takeoff and climbout, especially when the relative humidity is above 50%, or when visible moisture is present in the atmosphere."

Flight instructor Information

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| Certificate: | Commercial; Flight instructor | Age: | 22, Male |
| Airplane Rating(s): | Single-engine land | Seat Occupied: | Right |
| Other Aircraft Rating(s): | None | Restraint Used: | 3-point |
| Instrument Rating(s): | Airplane | Second Pilot Present: | No |
| Instructor Rating(s): | Airplane single-engine | Toxicology Performed: | |
| Medical Certification: | Class 1 With waivers/limitations | Last FAA Medical Exam: | January 31, 2022 |
| Occupational Pilot: | Yes | Last Flight Review or Equivalent: | November 22, 2022 |
| Flight Time: | 557.7 hours (Total, all aircraft), 113 hours (Total, this make and model), 496.5 hours (Pilot In Command, all aircraft), 115.6 hours (Last 90 days, all aircraft), 42.4 hours (Last 30 days, all aircraft), 3.7 hours (Last 24 hours, all aircraft) | | |

Student pilot Information

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| Certificate: | None | Age: | 14, Male |
| Airplane Rating(s): | None | Seat Occupied: | Left |
| Other Aircraft Rating(s): | None | Restraint Used: | 3-point |
| Instrument Rating(s): | None | Second Pilot Present: | No |
| Instructor Rating(s): | None | Toxicology Performed: | |
| Medical Certification: | None | Last FAA Medical Exam: | |
| Occupational Pilot: | No | Last Flight Review or Equivalent: | |
| Flight Time: | | | |

Aircraft and Owner/Operator Information

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| Aircraft Make: | Piper | Registration: | N103AV |
| Model/Series: | PA-28-181 | Aircraft Category: | Airplane |
| Year of Manufacture: | 1983 | Amateur Built: | |
| Airworthiness Certificate: | Normal | Serial Number: | 28-8390084 |
| Landing Gear Type: | Tricycle | Seats: | 4 |
| Date/Type of Last Inspection: | March 31, 2022 Annual | Certified Max Gross Wt.: | 2550 lbs |
| Time Since Last Inspection: | | Engines: | 1 Reciprocating |
| Airframe Total Time: | 13761.8 Hrs at time of accident | Engine Manufacturer: | Lycoming |
| ELT: | C91A installed, activated, did not aid in locating accident | Engine Model/Series: | O-360-A4M |
| Registered Owner: | FLYING TO INFINITY AND BEYOND LLC | Rated Power: | 180 Horsepower |
| Operator: | Centennial Aviation Academy INC | Operating Certificate(s) Held: | None |

Meteorological Information and Flight Plan

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| Conditions at Accident Site: | Visual (VMC) | Condition of Light: | Day |
| Observation Facility, Elevation: | PDK,979 ft msl | Distance from Accident Site: | 1 Nautical Miles |
| Observation Time: | 14:44 Local | Direction from Accident Site: | 26° |
| Lowest Cloud Condition: | Few | Visibility | 10 miles |
| Lowest Ceiling: | Broken / 4500 ft AGL | Visibility (RVR): | |
| Wind Speed/Gusts: | 8 knots / | Turbulence Type Forecast/Actual: | None / None |
| Wind Direction: | 190° | Turbulence Severity Forecast/Actual: | N/A / N/A |
| Altimeter Setting: | 30 inches Hg | Temperature/Dew Point: | 23°C / 14°C |
| Precipitation and Obscuration: | No Obscuration; No Precipitation | | |
| Departure Point: | Atlanta, GA | Type of Flight Plan Filed: | None |
| Destination: | Atlanta, GA | Type of Clearance: | None |
| Departure Time: | | Type of Airspace: | Class D |

Airport Information

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| Airport: | DEKALB-PEACHTREE PDK | Runway Surface Type: | Asphalt |
| Airport Elevation: | 998 ft msl | Runway Surface Condition: | Dry |
| Runway Used: | 3R | IFR Approach: | None |
| Runway Length/Width: | 6001 ft / 100 ft | VFR Approach/Landing: | None |

Wreckage and Impact Information

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|----------------------------|--------------------|-----------------------------|--------------------------|
| Crew Injuries: | 1 Serious, 1 Minor | Aircraft Damage: | Substantial |
| Passenger Injuries: | N/A | Aircraft Fire: | None |
| Ground Injuries: | N/A | Aircraft Explosion: | None |
| Total Injuries: | 1 Serious, 1 Minor | Latitude, Longitude: | 33.870301,-84.30246(est) |

Administrative Information

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| Investigator In Charge (IIC): | Kemner, Heidi |
| Additional Participating Persons: | Andre Cummings; FAA/FSDO; Atlanta, GA Mike Childers; Lycoming Engines; Williamsport, PA |
| Original Publish Date: | May 2, 2024 |
| Last Revision Date: | |
| Investigation Class: | Class 3 |
| Note: | The NTSB did not travel to the scene of this accident. |
| Investigation Docket: | https://data.nts.gov/Docket?ProjectID=106743 |

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).