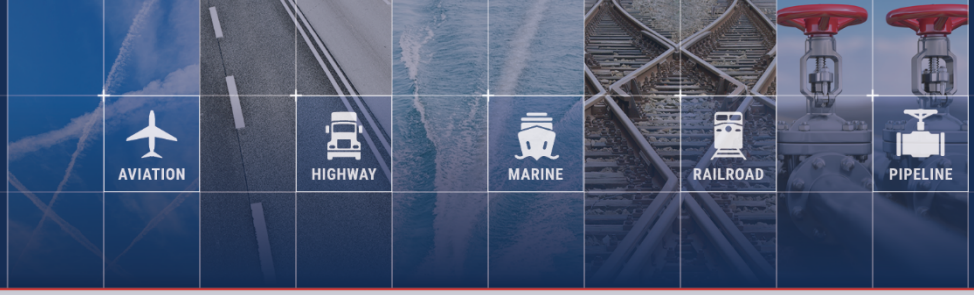


# Aviation Investigation Final Report

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|---|---|---|---|
| **Location:** | Warm Springs, Georgia | **Accident Number:** | ERA22LA291 |
| **Date & Time:** | June 26, 2022, 14:10 Local | **Registration:** | N14FC |
| **Aircraft:** | Piper PA-24-250 | **Aircraft Damage:** | Substantial |
| **Defining Event:** | Fuel starvation | **Injuries:** | 2 Serious |
| **Flight Conducted Under:** | Part 91: General aviation - Personal | | |

## Analysis

The pilot reported that after descending from 8,000 ft above mean sea level (msl) to 5,000 ft msl following a 2 hour cross-country flight, the engine power decreased from 2,300 rpm to 1,500 rpm. The pilot attempted to troubleshoot the partial loss of power by applying full rich mixture, ensuring that both fuel selectors were selected to the main wing tanks, and he turned on the electric fuel pump; however, full power was not restored. The pilot advised air traffic control of the emergency and he was informed of a nearby airport that required a 180° turn. While maneuvering to the airport, the engine lost all power, the descent rate increased, and the airplane impacted terrain and trees as the pilot attempted to land on a small road. The wings and fuselage sustained substantial damage.

Examination of the airplane at the accident site discovered that no fuel was present in either main wing tanks, nor was there any evidence that fuel had leaked from either main tanks. The left tip tank contained about 3 gallons of fuel, and the right tip tank was found empty, as it had been breached during the collision with trees.

Examination of the engine revealed no evidence of preimpact mechanical malfunctions or failures that would have precluded normal operation. Furthermore, the main fuel tank fuel lines and engine driven fuel pump displayed no evidence of fuel present when examined. There was also no evidence of in-flight fuel siphoning leakage discovered on the fuselage or wings.

The pilot reported that about 59 gallons of fuel was onboard for takeoff. It was estimated that for the 2 hour and 15 minute flight that had elapsed the airplane likely consumed about 31 gallons of fuel. He reported that during the preflight inspection he checked the fuel quantity visually, and he recalled that the main tanks were about his finger length from full.

The pilot reported that he did not top-off the fuel tanks before departing, and that throughout the flight he switched between the left and right main fuel tanks, feeding the engine from one main tank at a time. He did not use the tip tanks during the flight. During the descent, he switched both main tanks to the on position. It is likely that the pilot's initial partial loss of power was due to one of the main tanks containing no fuel, which introduced air into the fuel lines. The flight manual supplemental cautioned pilots from selecting a tank that contains no fuel. A few minutes later, the remaining wing tank likely was exhausted of fuel, which resulted in the total loss of power.

The investigation could not determine the discrepancy between how much fuel the pilot reported that he departed with versus what was likely consumed, and ultimately discovered on board at the accident site. The pilot had added fuel multiple times in the days preceding the accident between flights; however, the pilot did not use the fuel calculator onboard the aircraft and the fuel gauges postaccident indicated that both main tanks were about 1/4 full, when in fact they were both empty. These factors contributed to why the pilot likely departed with less fuel than he realized.

The pilot could have used the tip tank fuel while en route; however, the tip tanks were only to be used during level flight; thus, after the partial loss of power, the tip tanks were likely not a reliable source of fuel for the engine given the maneuvering that would have been required to reach the alternate airport. Had the pilot departed with sufficient fuel and topped-off the tanks before departure, or managed the fuel appropriately en route, the fuel starvation would have been prevented.

## Probable Cause and Findings

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

The loss of engine power due to fuel starvation as the result of the pilot's inadequate preflight inspection of the fuel supply before flight and the mismanagement of fuel during flight.

### Findings

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| **Personnel issues** | Preflight inspection - Pilot |
| **Personnel issues** | Fuel planning - Pilot |
| **Aircraft** | Fuel - Fluid level |

# Factual Information

## History of Flight

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|---|---|
| **Prior to flight** | Preflight or dispatch event |
| **Enroute-descent** | Fuel starvation (Defining event) |
| **Enroute-descent** | Collision with terr/obj (non-CFIT) |

On June 26, 2022, about 1410 eastern daylight time, a Piper PA-24-250 airplane, N14FC, was substantially damaged when it was involved in an accident near Warm Springs, Georgia. The private pilot and passenger sustained serious injuries. The airplane was operated by the pilot as a personal flight conducted under the provisions of Title 14 *Code of Federal Regulations* Part 91.

The pilot reported that the instrument flight rules flight departed from St. Pete-Clearwater International Airport (PIE), Clearwater, Florida, at 1153 and proceeded en route to his home airport of Newnan Coweta County Airport (CCO), Newnan, Georgia. After about 2 hours and 15 minutes, 20 miles south of the destination, the pilot completed an en route descent from 8,000 ft mean sea level (msl) to 5,000 ft msl. Upon reaching 5,000 ft msl, the engine power was set to 2300 rpm; however, it abruptly decreased to 1500 rpm. The pilot reported that the engine did not sputter, but rather it just "rolled back." He then moved the mixture to rich, ensured the fuel selectors were selected to the main tanks, and turned on the electric fuel pump; however, power did not increase. He then declared an emergency with air traffic control, and they advised him of the Roosevelt Memorial Airport (5A9), Warm Springs, Georgia behind his flight path.

The pilot completed a left 180° turn and saw the runway at 5A9 about 6-7 miles ahead, and as he maneuvered toward the runway, the engine lost all power. The pilot realized that he did not have the glide performance to reach the runway and turned toward a small logging road. The airplane impacted terrain and trees during the approach to the small road, which was about 1.5 miles north of the runway.

According to a Federal Aviation Administration (FAA) inspector who examined the airplane at the accident site and supervised the recovery of the airplane, the airplane sustained substantial damage to the wings and fuselage. When the airplane's electrical power was turned on, the left and right main fuel tank gauges displayed a reading of about 1/4 full, and the left tip tank gauge measured just below 1/4 full. When turned on, the electric fuel pump could be heard running. Both fuel selectors were found selected to the main positions.

The inspector observed that the main wing fuel tanks were found with no trace of fuel, no breaches of the fuel bladders were observed, and when the wings were removed for recovery,

no fuel exited either main fuel tanks. The left tip tank remained connected to the wing, was not breached, and contained about 3 gallons of fuel. The right tip tank separated from the wing, was partially breached, and no fuel was present in the tank.

Further examination of the engine at the recovery facility found that the engine displayed crankshaft and camshaft continuity and thumb compression on all cylinders. Both magnetos produced spark and the spark plugs exhibited normal combustion signatures. No anomalies were observed with the engine-driven fuel pump, and it contained no residual fuel.

During low pressure air tests of the fuel lines, with the fuel selector positioned to the main wing tanks, no fuel was observed to exit the lines, and no blockages were present. There was no evidence of oil or fuel leakage on the airframe.

According to the pilot, throughout the accident flight he switched from using the left and right main tanks and did not use the tip tanks at any point. When he initiated the descent preceding the loss of engine power, he recalled moving both left and right fuel selectors to the main tank on positions. The pilot reported using the electric fuel pump during the loss of engine power; however, carburetor heat was not used during the accident flight.

The pilot recalled that the fuel level on both main tanks were near his finger length from full when visually checked during the preflight, but the main tanks were not topped-off. He reported that he utilized the airplane's onboard fuel calculator to monitor the fuel flow; however, it was not his practice to use the device as a calculator to determine or track the total fuel onboard. He recalled after the accident that 59 gallons of fuel was onboard at takeoff, and that the fuel flow throughout the accident flight was 13 gallons per hour en route. According to basic fuel calculation estimates, the accident flight would have burned about 31 gallons.

According to the airplane's owner handbook and the tip tanks supplemental type certificate (STC), the airplane was equipped with two main fuel tanks per each wing that totaled 60 gallons (30 per main tank) and two tip tanks totaling 30 gallons (15 per tip tank). Photographs of the two fuel selector switches revealed that the engine could be operated from one or both main tanks, and either tip tank. The STC flight manual supplement warned that the fuel selector should not be selected to any tank that is empty, and that the switch should either be placed to a tank with fuel remaining or turned off. The tip tank fuel was only to be used during level flight.

Review of the FAA Special Airworthiness Information Bulletin (SAIB) CE-09-35 Carburetor Icing Probability Chart found that the airplane was at risk of serious icing at glide power while descending from 8,000 ft msl to 5,000 ft msl.

## Pilot Information

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| **Certificate:** | Private | **Age:** | 52,Male |
| **Airplane Rating(s):** | Single-engine land; Multi-engine land | **Seat Occupied:** | Left |
| **Other Aircraft Rating(s):** | Helicopter | **Restraint Used:** | Lap only |
| **Instrument Rating(s):** | Airplane | **Second Pilot Present:** | No |
| **Instructor Rating(s):** | None | **Toxicology Performed:** | |
| **Medical Certification:** | Class 3 Without waivers/limitations | **Last FAA Medical Exam:** | May 11, 2022 |
| **Occupational Pilot:** | No | **Last Flight Review or Equivalent:** | March 29, 2022 |
| **Flight Time:** | 455 hours (Total, all aircraft), 26 hours (Total, this make and model), 302 hours (Pilot In Command, all aircraft) | | |

## Aircraft and Owner/Operator Information

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|---|---|---|---|
| **Aircraft Make:** | Piper | **Registration:** | N14FC |
| **Model/Series:** | PA-24-250 NO SERIES | **Aircraft Category:** | Airplane |
| **Year of Manufacture:** | 1959 | **Amateur Built:** | |
| **Airworthiness Certificate:** | Normal | **Serial Number:** | 24-924 |
| **Landing Gear Type:** | Retractable - Tricycle | **Seats:** | 4 |
| **Date/Type of Last Inspection:** | January 1, 2022 Annual | **Certified Max Gross Wt.:** | 2800 lbs |
| **Time Since Last Inspection:** | 58 Hrs | **Engines:** | 1 Reciprocating |
| **Airframe Total Time:** | 3663 Hrs at time of accident | **Engine Manufacturer:** | LYCOMING |
| **ELT:** | C126 installed, not activated | **Engine Model/Series:** | O-540-A1A5 |
| **Registered Owner:** | COCHRAN FRED W JR | **Rated Power:** | 300 Horsepower |
| **Operator:** | On file | **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:** | CCO,970 ft msl | **Distance from Accident Site:** | 21 Nautical Miles |
| **Observation Time:** | 14:15 Local | **Direction from Accident Site:** | 350° |
| **Lowest Cloud Condition:** | Scattered / 4200 ft AGL | **Visibility** | 10 miles |
| **Lowest Ceiling:** | | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | / | **Turbulence Type Forecast/Actual:** | None / None |
| **Wind Direction:** | | **Turbulence Severity Forecast/Actual:** | N/A / N/A |
| **Altimeter Setting:** | 30.14 inches Hg | **Temperature/Dew Point:** | 30°C / 19°C |
| **Precipitation and Obscuration:** | No Obscuration; No Precipitation | | |
| **Departure Point:** | Clearwater, FL (PIE) | **Type of Flight Plan Filed:** | IFR |
| **Destination:** | Newnan, GA (CCO) | **Type of Clearance:** | IFR |
| **Departure Time:** | 11:53 Local | **Type of Airspace:** | Class G |

## Airport Information

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| **Airport:** | Roosevelt Memorial Airport 5A9 | **Runway Surface Type:** | |
| **Airport Elevation:** | 882 ft msl | **Runway Surface Condition:** | Dry |
| **Runway Used:** | | **IFR Approach:** | None |
| **Runway Length/Width:** | | **VFR Approach/Landing:** | Forced landing |

## Wreckage and Impact Information

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| **Crew Injuries:** | 1 Serious | **Aircraft Damage:** | Substantial |
| **Passenger Injuries:** | 1 Serious | **Aircraft Fire:** | None |
| **Ground Injuries:** | N/A | **Aircraft Explosion:** | None |
| **Total Injuries:** | 2 Serious | **Latitude, Longitude:** | 32.971525,-84.697594(est) |

## Administrative Information

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| **Investigator In Charge (IIC):** | Gerhardt, Adam |
| **Additional Participating Persons:** | Mark Fayerman; FAA/ FSDO; Atlanta, GA<br>Jon Hirsch; Piper Aircraft; Vero Beach, FL<br>James Childers; Lycoming Engines; Williamsport, PA |
| **Original Publish Date:** | November 15, 2023 |
| **Last Revision Date:** | |
| **Investigation Class:** | Class 3 |
| **Note:** | The NTSB did not travel to the scene of this accident. |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=105375 |