# Aviation Investigation Final Report

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| **Location:** | Eau Claire, Wisconsin | **Accident Number:** | CEN23LA099 |
| **Date & Time:** | February 5, 2023, 12:55 Local | **Registration:** | N9770J |
| **Aircraft:** | Piper PA-28-160 | **Aircraft Damage:** | Destroyed |
| **Defining Event:** | Fire/smoke (non-impact) | **Injuries:** | 3 None |
| **Flight Conducted Under:** | Part 91: General aviation - Personal | | |

## Analysis

The pilot attempted to start the engine six times before the battery died. He recharged the battery and attempted six more engine starts before ceasing further attempts. He said that during each engine start attempt, he applied the engine primer three times and pumped the throttle control two times. The throttle control was positioned about ¼ inch forward during each start attempt. At times during the start attempts, he placed the mixture control into idle cutoff and ran the engine starter.

The pilot and one passenger exited the airplane while one passenger remained inside. The passenger who exited the airplane noticed a small flame inside the engine cowling. The pilot told the passenger inside the airplane to move the mixture control to idle cutoff. The passenger then exited the airplane. The fuel selector was not turned to the off position. A large fire the erupted from the engine compartment, which destroyed the airplane. Fire damage precluded determination of the fuel and ignition sources of the fire.

## Probable Cause and Findings

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

The engine fire that began for undetermined reasons following numerous engine start attempts.

## Findings

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| **Not determined** | (general) - Unknown/Not determined |

# Factual Information

## History of Flight

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| **Prior to flight** | Unknown or undetermined |
| **Prior to flight** | Fire/smoke (non-impact) (Defining event) |

On February 5, 2023, at 1255 central standard time, a Piper PA-28-180, N9770J, was destroyed when it was involved in an accident near Eau Claire, Wisconsin. The commercial pilot and two passengers were uninjured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot stated that he last flew the airplane on December 4, 2022, during which time the airplane started and flew with no anomalies. On December 25, 2022, he was unable to start the airplane for a flight, which he attributed to the outside air temperature of -7°F.

On the day of the accident, the pilot attempted about six engine starts before the battery died and, once the battery was recharged, he attempted an additional six engine starts before he ceased further attempts to start the engine. He said that during each engine start attempt he applied engine primer three times and pumped the throttle control two times. The throttle control was positioned about ¼ inch forward during each start. At times during the start attempts, he placed the mixture control into idle cutoff and ran the engine starter. He stopped trying to start the engine and decided to contact an aircraft mechanic. The pilot and the passengers exited the airplane, and one of the passengers saw a small flame inside the engine cowl. The pilot told the remaining passenger to move the mixture control to idle cutoff. The fuel selector was not turned to the off position. The flames continued to spread and the airplane was destroyed by the fire.

A photo showed flames during the accident in two areas. The first area was beneath the engine and the second area was near the right aft top side of the engine by the right forward fuselage. Examination of the engine compartment in the first area revealed that the carburetor airbox assembly and the carburetor heat assembly were consumed by fire. The fuel line leading to the carburetor was intact. The area above the carburetor exhibited soot consistent with lower combustion temperatures above a hotter area, which lacked soot and was around the carburetor bowl. Examination of the second area revealed a separated and thermally damaged engine primer line for the No. 3 cylinder. The remainder of the engine primer lines were intact. The area near the separated primer line did not contain a comparable amount of soot as that of the area further from the separated primer line. Fire damage precluded determination of the fuel and ignition sources of the fire.

## Pilot Information

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| **Certificate:** | Commercial | **Age:** | 56,Male |
| **Airplane Rating(s):** | Single-engine land | **Seat Occupied:** | Left |
| **Other Aircraft Rating(s):** | Helicopter | **Restraint Used:** | Lap only |
| **Instrument Rating(s):** | Airplane; Helicopter | **Second Pilot Present:** | No |
| **Instructor Rating(s):** | Helicopter; Instrument helicopter | **Toxicology Performed:** | |
| **Medical Certification:** | Class 1 With waivers/limitations | **Last FAA Medical Exam:** | January 11, 2023 |
| **Occupational Pilot:** | Yes | **Last Flight Review or Equivalent:** | October 19, 2022 |
| **Flight Time:** | | | |

## Aircraft and Owner/Operator Information

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| **Aircraft Make:** | Piper | **Registration:** | N9770J |
| **Model/Series:** | PA-28-160 | **Aircraft Category:** | Airplane |
| **Year of Manufacture:** | 1967 | **Amateur Built:** | |
| **Airworthiness Certificate:** | Normal | **Serial Number:** | 28-3698 |
| **Landing Gear Type:** | Tricycle | **Seats:** | 4 |
| **Date/Type of Last Inspection:** | July 20, 2022 Annual | **Certified Max Gross Wt.:** | 2400 lbs |
| **Time Since Last Inspection:** | | **Engines:** | 1 Reciprocating |
| **Airframe Total Time:** | 3765.1 Hrs at time of accident | **Engine Manufacturer:** | Lycoming |
| **ELT:** | C91 installed, not activated | **Engine Model/Series:** | O-360-A4A |
| **Registered Owner:** | On file | **Rated Power:** | 180 |
| **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:** | EAU,913 ft msl | **Distance from Accident Site:** | 0 Nautical Miles |
| **Observation Time:** | 12:56 Local | **Direction from Accident Site:** | |
| **Lowest Cloud Condition:** | Clear | **Visibility** | 10 miles |
| **Lowest Ceiling:** | None | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | 6 knots / | **Turbulence Type Forecast/Actual:** | / |
| **Wind Direction:** | 310° | **Turbulence Severity Forecast/Actual:** | / |
| **Altimeter Setting:** | 29.99 inches Hg | **Temperature/Dew Point:** | -3°C / -9°C |
| **Precipitation and Obscuration:** | No Obscuration; No Precipitation | | |
| **Departure Point:** | Eau Claire, WI (EAU) | **Type of Flight Plan Filed:** | None |
| **Destination:** | | **Type of Clearance:** | None |
| **Departure Time:** | | **Type of Airspace:** | Class D |

## Airport Information

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| **Airport:** | Chippewa Valley Regional Airport EAU | **Runway Surface Type:** | |
| **Airport Elevation:** | 913 ft msl | **Runway Surface Condition:** | |
| **Runway Used:** | | **IFR Approach:** | None |
| **Runway Length/Width:** | | **VFR Approach/Landing:** | None |

## Wreckage and Impact Information

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| **Crew Injuries:** | 1 None | **Aircraft Damage:** | Destroyed |
| **Passenger Injuries:** | 2 None | **Aircraft Fire:** | On-ground |
| **Ground Injuries:** | | **Aircraft Explosion:** | None |
| **Total Injuries:** | 3 None | **Latitude, Longitude:** | 44.865806,-91.48425(est) |

## Administrative Information

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| **Investigator In Charge (IIC):** | Gallo, Mitchell |
| **Additional Participating Persons:** | Michael Brockel; Federal Aviation Administration; Milwaukee FSDO; Milwaukee, WI |
| **Original Publish Date:** | March 28, 2024 |
| **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=106682 |