# Aviation Investigation Final Report

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| **Location:** | Auburn, Nebraska | **Accident Number:** | CEN23FA077 |
| **Date & Time:** | January 11, 2023, 19:24 Local | **Registration:** | N22859 |
| **Aircraft:** | Cessna 150H | **Aircraft Damage:** | Substantial |
| **Defining Event:** | Loss of control in flight | **Injuries:** | 2 Fatal |
| **Flight Conducted Under:** | Part 91: General aviation - Instructional | | |

## Analysis

The flight instructor and student pilot flew a visual arrival to a non-towered airport in dark night visual meteorological conditions. Flight track information revealed that the airplane approached the airport and its last recorded position was consistent with a left downwind entry to the traffic pattern. The wreckage was located about 1.2 miles south of the runway, where the airplane impacted a farm field in a near wings-level and moderate nose-down attitude.

Examination of the airplane and engine revealed no evidence of a mechanical failure or malfunction that would have precluded normal operation. The carburetor heat control was in the full forward (off) position at the accident site and the wing flaps were retracted. The weather conditions around the time of the accident were conducive to the development of serious carburetor icing at cruise power settings. The propeller spinner and both propeller blades exhibited minimal rotational damage, and the airplane's impact attitude was consistent with a loss of control.

The cockpit was equipped with flood 'strip' lights, which the flight instructor had previously reported could make viewing the in-set instruments in the cockpit more difficult at night.

It is likely that the pilots were maneuvering to land before the accident occurred and would have been operating the airplane at a reduced engine power setting. The reduced power, lack of carburetor heat, and the atmospheric conditions present at the time would have significantly increased the engine's susceptibility to the development of carburetor icing, and resulted in a loss of engine power. Given the lack of flight track information, and witnesses, whether the accident occurred during the approach for the first landing or during a subsequent traffic pattern/landing could not be determined. The extent to which the dark night conditions,

airplane interior lighting, and lack of cultural lighting in the vicinity of the airport may have contributed to the outcome also could not be determined.

## 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 maintain control after a loss of engine power due to carburetor icing while maneuvering for forced landing in dark night visual meteorological conditions.

### Findings

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| **Personnel issues** | Aircraft control - Instructor/check pilot |
| **Aircraft** | (general) - Not used/operated |
| **Environmental issues** | Conducive to carburetor icing - Contributed to outcome |
| **Environmental issues** | Dark - Contributed to outcome |

# Factual Information

## History of Flight

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| **Approach** | Fuel related |
| **Approach** | Loss of control in flight (Defining event) |

On January 11, 2023, about 1924 central standard time, a Cessna 150H, N22859, was substantially damaged when it was involved in an accident near Farington Field Airport (K01), Auburn, Nebraska. The flight instructor and student pilot were fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

According to automatic dependent surveillance-broadcast (ADS-B) information, the airplane departed Lincoln Airport (LNK), Lincoln, Nebraska, about 1845 and climbed to 3,500 ft mean sea level (msl). About 6 miles northwest of K01, the airplane began a descent and the last ADS-B information captured at 19:22:26 showed the airplane about 1.1 miles west of K01 at 105 knots groundspeed and about 1,900 ft msl (see Figure 1).

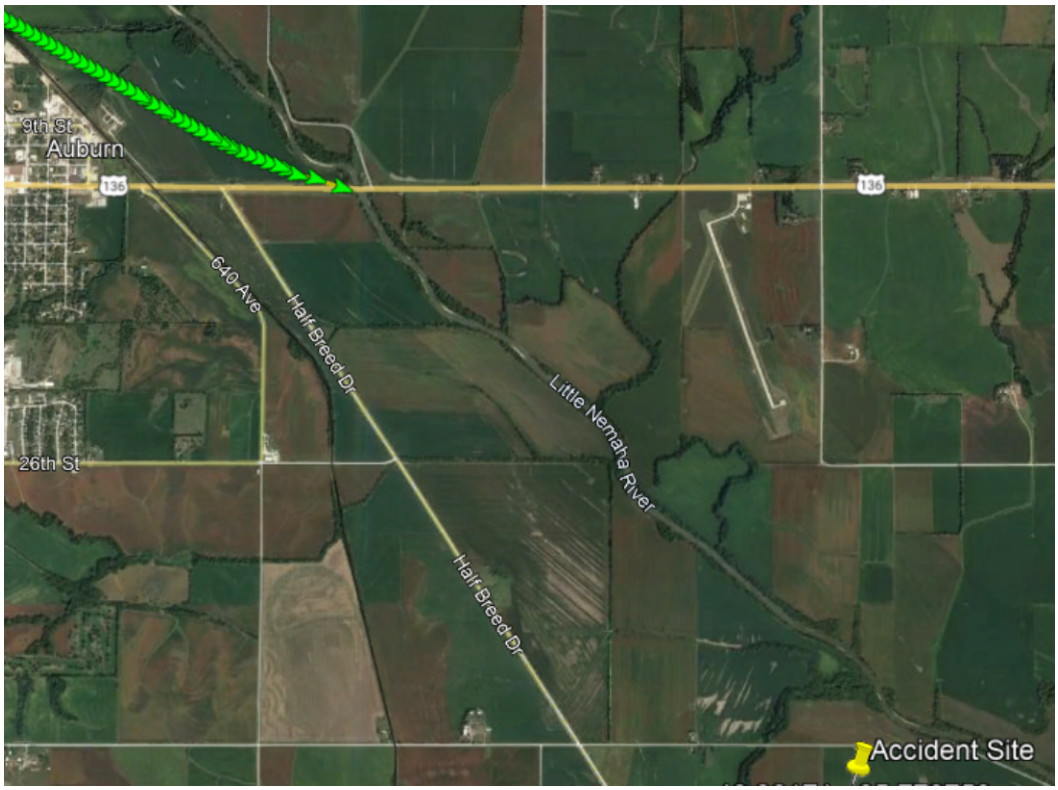


*Figure 1. Airplane's Flight Track, K01 Airport, and Accident Site*

The airplane impacted a field without crops while on a southeasterly heading, about 1.2 miles south of the runway 34 threshold at K01.

## Flight instructor Information

| | | | |
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| **Certificate:** | Commercial; Flight instructor | **Age:** | 24,Male |
| **Airplane Rating(s):** | Single-engine land; Multi-engine land | **Seat Occupied:** | Right |
| **Other Aircraft Rating(s):** | | **Restraint Used:** | Unknown |
| **Instrument Rating(s):** | Airplane | **Second Pilot Present:** | Yes |
| **Instructor Rating(s):** | Airplane single-engine | **Toxicology Performed:** | Yes |
| **Medical Certification:** | Class 1 Without waivers/limitations | **Last FAA Medical Exam:** | January 31, 2022 |
| **Occupational Pilot:** | Yes | **Last Flight Review or Equivalent:** | November 22, 2022 |
| **Flight Time:** | (Estimated) 572 hours (Total, all aircraft), 15 hours (Total, this make and model), 107 hours (Last 90 days, all aircraft), 30 hours (Last 30 days, all aircraft) | | |

## Student pilot Information

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|---|---|---|---|
| **Certificate:** | Student | **Age:** | 41,Male |
| **Airplane Rating(s):** | None | **Seat Occupied:** | Left |
| **Other Aircraft Rating(s):** | None | **Restraint Used:** | Unknown |
| **Instrument Rating(s):** | None | **Second Pilot Present:** | Yes |
| **Instructor Rating(s):** | None | **Toxicology Performed:** | Yes |
| **Medical Certification:** | Class 3 Without waivers/limitations | **Last FAA Medical Exam:** | May 3, 2022 |
| **Occupational Pilot:** | No | **Last Flight Review or Equivalent:** | |
| **Flight Time:** | 70 hours (Total, all aircraft), 20 hours (Total, this make and model) | | |

The flight instructor was issued his initial Federal Aviation Administration (FAA) flight instructor certificate on August 6, 2022, and a flight instructor instrument airplane rating on November 22, 2022. The flight instructor had accumulated about 36 total flight hours at night, and about 12 flight hours instructing students at night.

## Aircraft and Owner/Operator Information

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| **Aircraft Make:** | Cessna | **Registration:** | N22859 |
| **Model/Series:** | 150H | **Aircraft Category:** | Airplane |
| **Year of Manufacture:** | 1968 | **Amateur Built:** | |
| **Airworthiness Certificate:** | Utility | **Serial Number:** | 15068568 |
| **Landing Gear Type:** | Tricycle | **Seats:** | 2 |
| **Date/Type of Last Inspection:** | June 1, 2022 Annual | **Certified Max Gross Wt.:** | 1600 lbs |
| **Time Since Last Inspection:** | 3298 Hrs | **Engines:** | 1 Reciprocating |
| **Airframe Total Time:** | 3272 Hrs at time of accident | **Engine Manufacturer:** | Continental |
| **ELT:** | C91 installed, not activated | **Engine Model/Series:** | O-200A |
| **Registered Owner:** | On file | **Rated Power:** | 100 Horsepower |
| **Operator:** | On file | **Operating Certificate(s) Held:** | None |

The cockpit was equipped with flood ‘strip’ lights, which the flight instructor had previously reported could make viewing the in-set instruments in the cockpit more difficult at night (see Figure 2).

*Figure 2. Accident Airplane Cockpit Illuminated by Flood Lights*

## Meteorological Information and Flight Plan

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| **Conditions at Accident Site:** | Visual (VMC) | **Condition of Light:** | Night |
| **Observation Facility, Elevation:** | KAFK,1153 ft msl | **Distance from Accident Site:** | 14 Nautical Miles |
| **Observation Time:** | 19:15 Local | **Direction from Accident Site:** | 345° |
| **Lowest Cloud Condition:** | Scattered / 12000 ft AGL | **Visibility** | 10 miles |
| **Lowest Ceiling:** | | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | 12 knots / None | **Turbulence Type Forecast/Actual:** | Unknown / Unknown |
| **Wind Direction:** | 10° | **Turbulence Severity Forecast/Actual:** | Unknown / Unknown |
| **Altimeter Setting:** | 29.9 inches Hg | **Temperature/Dew Point:** | 0°C / -2°C |
| **Precipitation and Obscuration:** | No Obscuration; No Precipitation | | |
| **Departure Point:** | Lincoln, NE (LNK) | **Type of Flight Plan Filed:** | None |
| **Destination:** | Lincoln, NE (LNK) | **Type of Clearance:** | None |
| **Departure Time:** | 18:45 Local | **Type of Airspace:** | Class G |

On the evening of the accident, United States Naval Observatory data indicated sunset occurred at 1717, the end of civil twilight was at 1747, and moonrise was at 2153 (after the accident). The accident site was surrounded by farm fields with an absence of cultural lighting.

According to the FAA Special Airworthiness Information Bulletin CE-09-35, Carburetor Icing Prevention, the probability of carburetor icing during the weather conditions of the accident was serious at cruise power.

## Airport Information

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| **Airport:** | Farington Field K01 | **Runway Surface Type:** | Concrete |
| **Airport Elevation:** | 924 ft msl | **Runway Surface Condition:** | Dry |
| **Runway Used:** | 34 | **IFR Approach:** | None |
| **Runway Length/Width:** | 3750 ft / 60 ft | **VFR Approach/Landing:** | Traffic pattern |

K01 was equipped with minimum intensity runway lighting for runway 16/34.

## Wreckage and Impact Information

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| **Crew Injuries:** | 2 Fatal | **Aircraft Damage:** | Substantial |
| **Passenger Injuries:** | | **Aircraft Fire:** | None |
| **Ground Injuries:** | | **Aircraft Explosion:** | None |
| **Total Injuries:** | 2 Fatal | **Latitude, Longitude:** | 40.36171,-95.779759(est) |

The airplane impacted a field without crops while on a southeasterly heading, about 1.2 miles south of the runway 34 threshold at K01. Ground impressions of the landing gear and crushing of the front fuselage (nose area) were consistent with a near wings level and moderate nose down attitude during impact.

All components of the airplane were observed at the impact site. Flight control continuity was confirmed. The wing flaps and wing flap actuator were both observed in the retracted position. Fuel drained from both wing tanks and the fuel bowl contained no indications of water or sediment.

The propeller spinner was crushed aft, with minimal rotational damage. Both propeller blades were bent aft, with minimal rotational scoring or polishing. The throttle control was observed in a mid-position and was bent, and the mixture control was near the full forward (rich) position. The carburetor heat control was observed in the full forward (off) position.

No evidence of pre-impact mechanical malfunctions were observed during examinations of the engine and airframe that would have precluded normal operation.

## Medical and Pathological Information

An autopsy was performed on the flight instructor and student pilot by a medical examiner, as directed by the Nemaha County Coroner, Auburn, Nebraska. The cause of death was multiple blunt force injuries.

Toxicology testing of the flight instructor and student pilot performed by the FAA Forensic Sciences Laboratory did not identify any tested-for substances.

## Administrative Information

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| **Investigator In Charge (IIC):** | Folkerts, Michael |
| **Additional Participating Persons:** | Nicholas Weiss; FAA, Flight Standards District Office; Lincoln, NE<br>Andrew Hall; Textron Aviation; Wichita, KS |
| **Original Publish Date:** | September 5, 2024 |
| **Last Revision Date:** | |
| **Investigation Class:** | Class 3 |
| **Note:** | |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=106566 |