Aviation Investigation Final Report

Location:	Buffalo, Iowa	**Accident Number:**	CEN23LA163
Date & Time:	April 22, 2023, 01:36 Local	**Registration:**	N60860
Aircraft:	Cessna 150J	**Aircraft Damage:**	Substantial
Defining Event:	Fuel exhaustion	**Injuries:**	1 Minor, 1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot had completed 3 flight legs immediately before the accident flight without incident. The accident flight proceeded normally until it neared the destination airport. The pilot reported a rapid drop in engine speed as if the throttle control had been abruptly moved to idle. The engine seemed to completely lose power for about 30 to 45 seconds. It then regained a “strong burst” of power. However, about 5 to 10 seconds later, the engine lost power again. His efforts to restore engine power were not successful. He attempted to execute a forced landing to a road; however, a wind gust caused the airplane to impact a light pole before it came to rest on railroad tracks. The nose landing gear collapsed and the airplane was oriented in a nose-down position, with damage to the fuselage, engine mount, and both wings.

Postaccident examination did not identify any engine anomalies consistent with an inability to produce rated power. Both main fuel tanks appeared to be intact; however, both appeared to contain only a minimal amount of fuel. The gascolator bowl contained fuel, which was consistent with the airplane resting in a nose-low attitude after the accident.

The airplane was fully fueled (22.5 gallons useable) before departing initially and was fueled with 20 additional gallons during the previous flights. According to the airplane owner’s manual, the expected fuel consumption varied from about 5.5 gallons per hour (gph) to about 7.0 gph. The pilot reported the engine was leaned as appropriate for all stages of flight.

The pilot also noted that the engine took about 2 minutes to shut down after the mixture control was moved to the idle/cutoff position at 2 of the intermediate stops. This suggests an improperly adjusted mixture control that would have resulted in a slightly rich mixture and higher than anticipated fuel consumption. The pilot also reported the fuel gauges were not reliable as they did not indicate the correct amount of fuel that he visually verified was in the tanks.

The total flight time over the 3 preceding flights and the accident flight was about 6 hours. Based on the lack of fuel onboard the airplane, a total fuel consumption of 42.5 gallons would equate to about 7 gallons per hour, within the range of the published fuel consumption for the airplane. Also, the fuel consumption was likely higher than anticipated due to the improperly adjusted mixture.

Although weather conditions at the time of the accident were conducive to carburetor icing, the loss of engine power as described by the pilot was not consistent with a carburetor icing scenario.

Based on the available information, the engine lost power due to fuel exhaustion. It is likely that a slightly rich mixture increased the fuel consumption from that anticipated by the owner's manual.

Probable Cause and Findings

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

A loss of engine power due to fuel exhaustion as a result of the pilot's inadequate preflight planning. Contributing to the accident were the unreliable fuel quantity gauges and the improperly adjusted mixture control, which increased the fuel consumption above that anticipated by the owner's manual.

Findings

Personnel issues	Fuel planning - Pilot
Aircraft	Fuel - Fluid level
Aircraft	Fuel distribution - Damaged/degraded

Factual Information

History of Flight

Enroute-cruise	Fuel exhaustion (Defining event)
Emergency descent	Off-field or emergency landing
Landing	Collision with terr/obj (non-CFIT)

On April 22, 2023, about 0136 central daylight time, a Cessna 150J airplane, N60860, was substantially damaged when it was involved in an accident near Buffalo, Iowa. The pilot was not injured and the pilot-rated passenger sustained a minor injury. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

Automatic dependent surveillance – broadcast (ADS-B) data revealed that the pilot completed 3 flight legs during the evening and night. The accident occurred on the 4th flight leg. He departed Augusta Municipal Airport (3AU) about 1710 (April 21st) and arrived at Tulsa Riverside Airport (RVS) about 1818. The pilot departed RVS about 1913 and arrived at Lamar Municipal Airport (LLU) about 2037. Beginning about 2129, the pilot departed LLU and remained in the traffic pattern. The pilot reported that he completed 3 solo night takeoffs and full stop landings for currency, departed LLU about 2143, and arrived at Omar N. Bradley Airport (MBY) about 2323. The pilot then departed MBY about 0000 (April 22nd) with an intended destination of Davenport Municipal Airport (DVN). The final ADS-B data point was recorded at 0136:35, and the associated barometric altitude was 700 ft. The accident site was located about 280 yards west of the final data point.

The pilot reported that the engine lost power when the airplane was about 11 miles south-southwest of the intended destination airport. He noted a rapid drop in engine rpm as if the throttle control had been abruptly moved to idle. The engine seemed to completely lose power for about 30 to 45 seconds before it then regained power, reaching about 2300 rpm. He described it as a "strong burst" of power. About 5 to 10 seconds later, the engine lost power again. His efforts to restore engine power were not successful.

The pilot attempted to execute a forced landing to a road; however, a wind gust caused the airplane to impact a light pole and it came to rest on a set of railroad tracks. The nose landing gear collapsed and the airplane was oriented in a nose-down position with damage to the fuselage, engine mount, and both wings.

The pilot stated the airplane was fully fueled before departing 3AU and was fueled with 12 gallons (total) at LLU and with 8 gallons (total) at MBY. The passenger joined the flight at RVS, and the pilot limited the amount of fuel taken onboard to remain within the gross weight limitation for the airplane. According to the airplane owner's manual, the maximum total and

useable fuel capacity was 26.0 gallons and 22.5 gallons, respectively. According to the manual, fuel consumption varied from about 5.5 gallons per hour (gph) to about 7.0 gph.

The pilot stated the cockpit fuel gauges indicated full before the initial departure from 3AU. However, approaching MBY, they appeared to indicate near empty. At MBY, the pilot determined that each fuel tank contained about 4 gallons and he added 8 gallons. He deemed the fuel gauge indications unreliable since they did not appear to correspond to his visual fuel quantity determination and his preflight fuel calculations.

The pilot reported the engine was leaned as appropriate for all stages of flight. He also commented that, after arriving at RVS, the engine took about 2 minutes to shut down after the mixture control was moved to the idle/cutoff position. The same issue occurred upon arrival and shut down at LLU.

Postaccident examination did not identify any engine anomalies consistent with an inability to produce rated power. Both main fuel tanks appeared to be intact. The left main fuel tank appeared to contain minimal fuel along with a significant quantity of water consistent with the airplane being stored outside. The right fuel tank appeared to be empty at the time of the examinations. Both fuel caps were securely installed at the time of the initial airplane examination. However, at the time of the engine examination, the left fuel cap was not installed. The initial examination revealed the gascolator bowl contained fluid consistent in appearance to aviation fuel. The bowl was free of debris or sediment.

Weather conditions at the time of the accident were conducive to carburetor icing as noted in Federal Aviation Administration Special Airworthiness Information Bulletin CE-09-35. The bulletin noted that carburetor ice can be detected by a drop in engine speed, usually accompanied by a roughness in engine operation.

Pilot Information

Certificate:	Private	**Age:**	22,Male
Airplane Rating(s):	Single-engine land	**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:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	November 12, 2019
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	July 22, 2022
Flight Time:	97 hours (Total, all aircraft), 5 hours (Total, this make and model), 68 hours (Pilot In Command, all aircraft), 6 hours (Last 90 days, all aircraft), 5 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N60860
Model/Series:	150J	**Aircraft Category:**	Airplane
Year of Manufacture:	1969	**Amateur Built:**	
Airworthiness Certificate:	Utility	**Serial Number:**	15070627
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	February 1, 2023 Annual	**Certified Max Gross Wt.:**	1600 lbs
Time Since Last Inspection:	69 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	8412 Hrs as of last inspection	**Engine Manufacturer:**	Continental
ELT:	C126 installed, activated, did not aid in locating accident	**Engine Model/Series:**	O-200-A
Registered Owner:	On file	**Rated Power:**	100 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None
Operator Does Business As:	On file	**Operator Designator Code:**	N/A

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	KMLI,576 ft msl	**Distance from Accident Site:**	9.8 Nautical Miles
Observation Time:	01:52 Local	**Direction from Accident Site:**	93°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Broken / 8500 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots / 0 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	270°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.87 inches Hg	**Temperature/Dew Point:**	5°C / -1°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Moberly, MO (MBY)	**Type of Flight Plan Filed:**	VFR
Destination:	Davenport, IA (DVN)	**Type of Clearance:**	VFR flight following
Departure Time:	00:00 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	Davenport Municipal DVN	**Runway Surface Type:**	
Airport Elevation:	750 ft msl	**Runway Surface Condition:**	Rough
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor, 1 None	**Latitude, Longitude:**	41.45657,-90.72091

Administrative Information

Investigator In Charge (IIC):	Sorensen, Timothy
Additional Participating Persons:	Barton Van Heuveln; FAA Flight Standards; Ankeny, IA
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=107106