



AVIATION



HIGHWAY



MARINE



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PIPELINE

# Aviation Investigation Final Report

<b>Location:</b>	Danbury, Connecticut	<b>Accident Number:</b>	ERA23LA191
<b>Date &amp; Time:</b>	April 10, 2023, 17:59 Local	<b>Registration:</b>	N757YM
<b>Aircraft:</b>	Cessna 152	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Fuel exhaustion	<b>Injuries:</b>	2 Minor
<b>Flight Conducted Under:</b>	Part 91: General aviation - Instructional		

## Analysis

The airplane was fueled earlier in the day then flown on 3 separate flights totaling 3.1 hours. Before the accident flight, the student pilot used a fuel dipstick to check the fuel level in each tank but she did not recall the fuel quantity in either tank and the flight instructor did not verify the fuel quantity. After departure, with a reported 15 gallons of fuel on board, the student performed pattern work, airwork, and more traffic pattern work. After the 3rd go-around, while on the downwind leg abeam the landing spot, the flight instructor took over the controls to demonstrate a landing. After turning onto base leg, the engine began to lose power. He pitched then nose down and reported the engine started and for about 2 seconds before losing power completely. He noted there were 2 high towers near the end of the runway and turned toward a grass field behind him and performed a steep spiral to lose altitude. The airplane slowed, and he heard the stall warning horn. He moved the flap selector from 10° to 20° then braced for impact. The airplane impacted a shed and came to rest adjacent to a house.

Postaccident examination of the engine and its systems revealed no evidence of preimpact failure or malfunction. The airframe fuel strainer was found to contain about 1 ounce of fuel and the carburetor bowl was empty. The right wing contained about 1.7 gallons of fuel and the left fuel tank was empty.

The usable fuel capacity of the airplane was 24.5 gallons. The airplane was flown 5.3 hours since the fuel tanks were last filled. The published fuel consumption rate for the engine was listed as being between 5.8 gallons per hour (gph) and 9.5 gph depending on power settings used. Given the fuel capacity of the airplane and the amount of time the airplane was flown after being fueled, it is likely that the loss of engine power was a result of fuel exhaustion.

## Probable Cause and Findings

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

The flight instructor’s inadequate preflight fuel planning and oversight of the preflight inspection, which resulted in a total loss of engine power due to fuel exhaustion.

Findings	
Aircraft	Fuel - Fluid level
Personnel issues	Fuel planning - Instructor/check pilot
Personnel issues	Preflight inspection - Instructor/check pilot

# Factual Information

## History of Flight

Approach	Fuel exhaustion (Defining event)
Maneuvering	Off-field or emergency landing
Maneuvering	Collision with terr/obj (non-CFIT)

On April 10, 2023, about 1759 eastern daylight time, a Cessna 152, N757YM, was substantially damaged when it was involved in an accident near Danbury, Connecticut. The flight instructor and student pilot sustained minor injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

The student reported she performed weight and balance calculations, which reflected that there were 15 gallons of fuel on board. The flight instructor later reported he used a rate of 5 gallons-per-hour for fuel consumption calculations, or about 3 hours of fuel remaining, but that did not consider the fuel consumed for engine start, taxi, or takeoff. The student stated that she performed a preflight inspection that included a check of the fuel tanks using a dipstick, though she could not recall the value or reading in either tank. Her flight instructor indicated there was enough for the intended flight though he stated that he did not check the fuel tanks, and he could not recall either fuel gauge reading at engine start. The student performed an engine run-up before departure, which included a check of the magnetos and carburetor heat, both of which were operative. All instruments were working, and the flight instructor had her check the fuel gauges, but he did not recall her telling him anything about them.

According to ADS-B data, the flight departed from runway 26 about 1601, and the flight instructor stated that after takeoff they remained in the airport traffic pattern and performed a go-around, and a normal landing. They departed the airport traffic pattern to practice airwork, then returned to the airport to do more pattern work. After the 3rd go-around, while on the downwind leg abeam the landing spot, he took over control of the airplane to demonstrate a landing and turned onto the base leg of the airport traffic pattern. While flying at 65 knots between 800 and 900 ft mean sea level, the engine began “sputtering.” He pitched down and reported the engine started and only ran for about 2 seconds, then it lost all power. He looked at runway 26, and noted there were 2 high towers near the end of the runway and remembered a grass field behind him and turned to fly towards it. He performed a steep spiral to lose altitude. The airplane slowed, and he heard the stall warning horn. He moved the flap selector from 10° to 20° and braced for impact. The student reported the airplane impacted a shed. Both pilots reported an EMT told them they smelled of fuel after the accident.

## Student pilot Information

<b>Certificate:</b>	None	<b>Age:</b>	18,Female
<b>Airplane Rating(s):</b>	None	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Lap only
<b>Instrument Rating(s):</b>	None	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	
<b>Medical Certification:</b>	None	<b>Last FAA Medical Exam:</b>	
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	(Estimated) 8 hours (Total, all aircraft)		

## Flight instructor Information

<b>Certificate:</b>	Commercial; Flight instructor	<b>Age:</b>	29,Male
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Right
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Lap only
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	Airplane single-engine; Instrument airplane	<b>Toxicology Performed:</b>	
<b>Medical Certification:</b>	Class 1 With waivers/limitations	<b>Last FAA Medical Exam:</b>	January 4, 2022
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	February 14, 2022
<b>Flight Time:</b>	206 hours (Total, all aircraft), 15 hours (Total, this make and model), 142 hours (Pilot In Command, all aircraft), 21 hours (Last 90 days, all aircraft), 18 hours (Last 30 days, all aircraft), 6 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Cessna	<b>Registration:</b>	N757YM
<b>Model/Series:</b>	152 No Series Exists	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	1977	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Utility	<b>Serial Number:</b>	15280110
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	March 30, 2023 100 hour	<b>Certified Max Gross Wt.:</b>	1670 lbs
<b>Time Since Last Inspection:</b>	17 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	5833.6 Hrs as of last inspection	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	O-235-L2C (M)
<b>Registered Owner:</b>	DARCY AVIATION LLC	<b>Rated Power:</b>	125 Horsepower
<b>Operator:</b>	DARCY AVIATION LLC	<b>Operating Certificate(s) Held:</b>	None

The airplane was modified in accordance with multiple Supplemental Type Certificates (STC's) which included installation of a Lycoming O-235-L2C(M) engine and installation of a Sensenich fixed pitch propeller.

The engine limitations section of the FAA Approved Airplane Flight Manual Supplement (AFMS) associated with the engine and propeller modifications stated that the rated rpm was 2,800 and 125 horsepower for all operations. The performance section of the AFMS specified that the incorporation of the STC into the airplane would result in increased fuel consumption relative to the values given in the airplane flight manual.

According to the Airplane Type certificate Data Sheet, the total usable fuel capacity of the airplane was 24.5 gallons with an unusable fuel amount in each wing fuel tank of .75 gallon for a total unusable fuel capacity of 1.5 gallons. The Pilot's Operating Handbook specified that the fuel consumed during engine start, taxi, and takeoff was 0.8 gallon. According to the engine Operator's Manual, the fuel consumption in terms of gph varied from 9.5 gph at normal rated power to 5.8 gph at 65% rated power.

According to fuel records, 16.6 gallons of 100 low lead fuel were added on the morning of the accident, filling the fuel tanks. Operator records showed that between the time the airplane was fueled and the accident flight, the airplane flew 3 flights totaling 3.1 hours. The elapsed time for the accident flight was 2.2 hours as documented by the hour meter. The airplane was flown for a total of 5.3 hours since it was last fueled.

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	KDXR, 453 ft msl	<b>Distance from Accident Site:</b>	1 Nautical Miles
<b>Observation Time:</b>	17:53 Local	<b>Direction from Accident Site:</b>	248°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	/ None	<b>Turbulence Type Forecast/Actual:</b>	Unknown / Terrain-Induced
<b>Wind Direction:</b>		<b>Turbulence Severity Forecast/Actual:</b>	Unknown / Unknown
<b>Altimeter Setting:</b>	30.3 inches Hg	<b>Temperature/Dew Point:</b>	19°C / -10°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Danbury, CT (DXR)	<b>Type of Flight Plan Filed:</b>	VFR
<b>Destination:</b>	Danbury, CT (DXR)	<b>Type of Clearance:</b>	VFR
<b>Departure Time:</b>	16:01 Local	<b>Type of Airspace:</b>	

## Airport Information

<b>Airport:</b>	Danbury Municipal Airport DXR	<b>Runway Surface Type:</b>	
<b>Airport Elevation:</b>	457 ft msl	<b>Runway Surface Condition:</b>	
<b>Runway Used:</b>		<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>		<b>VFR Approach/Landing:</b>	Forced landing

## Wreckage and Impact Information

<b>Crew Injuries:</b>	2 Minor	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	N/A	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>		<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	2 Minor	<b>Latitude, Longitude:</b>	41.380237, -73.455784

According to the FAA inspector, the airplane impacted a residential area about 1 mile east of the Danbury Municipal Airport (DXR), Danbury, Connecticut. The right wing impacted near the roof line of a house adjacent to the shed, then impacted the shed. There was no postimpact

fire. The airplane came to rest listing to the right. No fuel was drained from the left fuel tank which was nearly vertical and about 1.7 gallons were drained from the right fuel tank.

Examination of the fuel system following recovery revealed broken fuel supply lines in the cockpit area; however, there was no blue stains in those areas. Although the fuel supply line to the airframe fuel strainer was kinked and the bowl was separated from the firewall the bowl was drained and found to contain about 40 milliliters, or about 1 ounce of fuel. The carburetor bowl did not contain any fuel. There were no discrepancies with either fuel cap which were vented. No discrepancies other than impact damage were noted to the fuel supply lines. Due to impact damage the fuel gauges were not electrically checked.

Postaccident examination of the engine revealed no evidence of preimpact failure or malfunction of the powertrain, ignition, air induction, or exhaust systems. Throttle and mixture control continuity was confirmed from the cockpit to the carburetor. There were no nicks on the leading or trailing edges of either propeller blade and neither propeller blade exhibited scoring on the cambered side or blade face. One blade exhibited a slight aft bend.

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Monville, Timothy
<b>Additional Participating Persons:</b>	William R. Midwood; FAA/FSDO; Enfield, CT
<b>Original Publish Date:</b>	March 19, 2025
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class 3</a>
<b>Note:</b>	The NTSB did not travel to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=107046">https://data.nts.gov/Docket?ProjectID=107046</a>

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](#).