



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

Aviation Investigation Final Report

Location:	Jeffersonville, Indiana	Accident Number:	CEN23LA281
Date & Time:	July 6, 2023, 08:24 Local	Registration:	N988CT
Aircraft:	DIAMOND AIRCRAFT IND INC DA20-C1	Aircraft Damage:	Substantial
Defining Event:	Fuel exhaustion	Injuries:	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The flight instructor reported that, before the flight, he and his student inserted a calibrated wooden stick into the fuel tank to check the fuel quantity of the airplane and believed that it indicated just below $\frac{3}{4}$ tank, or about 16 gallons of fuel remaining. They completed the preflight inspection and proceeded with the flight to another airport for takeoff and landing practice. While at the other airport, they performed six circuits of the traffic pattern before proceeding back toward the departure airport.

As they approached the airport, the flight instructor heard the engine speed decrease and initially thought his student had retarded the throttle, but she had not. The engine recovered briefly and then sputtered again. The flight instructor said he checked the mixture, master switch, ignition, and fuel pump settings, and the engine continued to have spurts of power. He surmised that they were experiencing a fuel issue and noted that the fuel gauge read empty. He notified air traffic control, and was cleared to land, but had insufficient altitude and executed a forced landing to a corn field. The airplane received substantial damage to the fuselage including separation of the empennage.

Postaccident examination of the airplane revealed no usable fuel remained in the fuel tank.

The flight instructor reported that he believed the time of day, weather conditions and lighting combined with an expectation bias, contributed to misreading of the fuel stick, which likely read below $\frac{1}{2}$ tank before the flight. He also noted that he prepared a safety presentation about the event to present to flying club members and other aviation meetings.

Based on the available information, the engine power loss was due to exhaustion of the airplane's fuel supply.

Probable Cause and Findings

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

The pilot’s improper fuel management, which resulted in fuel exhaustion and a total loss of engine power.

Findings

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

Factual Information

History of Flight

Enroute	Fuel exhaustion (Defining event)
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Pilot Information

Certificate:	Commercial; Flight instructor	Age:	51,Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	4-point
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane single-engine; Instrument airplane	Toxicology Performed:	
Medical Certification:	Class 1 With waivers/limitations	Last FAA Medical Exam:	September 26, 2022
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	940 hours (Total, all aircraft), 101 hours (Total, this make and model), 869 hours (Pilot In Command, all aircraft), 167 hours (Last 90 days, all aircraft), 69 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Student pilot Information

Certificate:	Student	Age:	17,Female
Airplane Rating(s):	None	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	4-point
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	
Medical Certification:	Unknown	Last FAA Medical Exam:	
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	16 hours (Total, all aircraft), 16 hours (Total, this make and model), 16 hours (Last 90 days, all aircraft), 8 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	DIAMOND AIRCRAFT IND INC	Registration:	N988CT
Model/Series:	DA20-C1	Aircraft Category:	Airplane
Year of Manufacture:	1999	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	C0088
Landing Gear Type:	Tricycle	Seats:	2
Date/Type of Last Inspection:	June 1, 2023 Annual	Certified Max Gross Wt.:	1770 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	9949 Hrs as of last inspection	Engine Manufacturer:	Continental
ELT:	Installed, not activated	Engine Model/Series:	IO-240-B32B
Registered Owner:	FLIGHT CLUB 502 INC	Rated Power:	125 Horsepower
Operator:	FLIGHT CLUB 502 INC	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KSDF, 480 ft msl	Distance from Accident Site:	9 Nautical Miles
Observation Time:	08:56 Local	Direction from Accident Site:	196°
Lowest Cloud Condition:	Few / 3800 ft AGL	Visibility	10 miles
Lowest Ceiling:	Broken / 25000 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	6 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	250°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.95 inches Hg	Temperature/Dew Point:	26°C / 22°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Louisville, KY (LOU)	Type of Flight Plan Filed:	None
Destination:	Louisville, KY (LOU)	Type of Clearance:	VFR
Departure Time:	06:45 Local	Type of Airspace:	Class E

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	38.318108,-85.687989

Administrative Information

Investigator In Charge (IIC):	Brannen, John
Additional Participating Persons:	Gary Brown; FAA; Indianapolis, IN
Original Publish Date:	October 26, 2023
Last Revision Date:	
Investigation Class:	Class 4
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=192547

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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](#).