



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

## Aviation Investigation Final Report

<b>Location:</b>	Fayetteville, Arkansas	<b>Accident Number:</b>	CEN23FA074
<b>Date &amp; Time:</b>	January 6, 2023, 17:52 Local	<b>Registration:</b>	N673V
<b>Aircraft:</b>	Beech M35	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>	Fuel starvation	<b>Injuries:</b>	1 Fatal
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

### Analysis

The pilot departed on the first leg of the trip with the airplane fully fueled and two passengers onboard. After about an hour flight, the pilot landed at the destination airport and dropped off both passengers. The airplane was not fueled at that time. The pilot departed as the sole occupant to return to the initial airport. About 18 miles from the destination airport, the airplane entered a gradual descent as it remained on course. About 6 minutes later, the airplane entered a descending left turn that continued until the available position data ended. The airplane impacted trees and terrain about 3 miles from the airport. The accident site was in a wooded area adjoining an open field.

A witness heard the airplane as it approached and recalled that the engine sounded as if it was going to lose power but then "revved up really high." This cycle occurred 3 or 4 times over a span of 10 – 15 seconds. The engine then seemed to stop; however, he was unsure if the airplane had descended behind a ridgeline. He did not hear the impact nor was he able to see the airplane.

Postaccident airframe and engine examinations did not reveal any preaccident mechanical malfunctions or failures that would have precluded normal operation.

The airplane was equipped with 2 25-gallon main fuel tanks and 2 10-gallon auxiliary fuel tanks. The fuel selector valve had settings for the left main tank, the right main tank, and the auxiliary tanks. The main fuel tanks were selected individually. Both auxiliary tanks fed simultaneously when selected. Excess (unburned) fuel from the engine was returned to the selected main fuel tank or, if the auxiliary tanks were selected, to the left main fuel tank.

The fuel tank caps were securely installed, and each tank appeared to be intact. About 15 gallons and 10 gallons of fuel were recovered from the left and right main fuel tanks, respectively. Both the left and right auxiliary fuel tanks contained minimal fuel.

Data recovered from an onboard electronic engine display unit revealed that the pilot departed on the initial leg of the trip with the left fuel main fuel tank selected. About midflight, the pilot changed to the auxiliary fuel tanks. Upon departure on the accident flight, the pilot had the right main fuel tank selected. About 14 minutes before the accident, the pilot selected the auxiliary fuel tanks to supply the engine. About 2 minutes before the accident, the useable fuel contained in the auxiliary tanks was exhausted, and the engine lost power due to fuel starvation. The pilot most likely selected the left main fuel tank in an effort to restore engine power. Useable fuel was available in both the left and right main fuel tanks when the engine lost power.

The pilot was likely maneuvering toward an open field for a forced landing under a clear night sky and rising full moon. However, the airplane did not have sufficient altitude to reach the field. It could not be determined whether the night lighting conditions hindered the pilot's attempted forced landing.

## Probable Cause and Findings

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

The pilot's mismanagement of the airplane's fuel system, which resulted in fuel starvation and a loss of engine power.

### Findings

<b>Aircraft</b>	Fuel - Fluid management
<b>Personnel issues</b>	Use of equip/system - Pilot

## Factual Information

### History of Flight

Approach-VFR pattern downwind	Fuel starvation (Defining event)
Emergency descent	Off-field or emergency landing

On January 6, 2023, about 1752 central standard time, a Beech M35 airplane, N673V, was destroyed when it was involved in an accident near Fayetteville, Arkansas. The pilot was fatally injured. 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 airplane departed Drake Field Airport (FYV), Fayetteville, Arkansas, at 1531 and proceeded to Stuttgart Municipal Airport (SGT), Stuttgart, Arkansas, arriving at 1629. A pilot-rated passenger, who was on board during this leg of the trip, reported the flight was routine and there were no issues with the airplane. The pilot informed him the airplane was fully fueled before departure from FYV; it was not fueled while at SGT. The pilot-rated passenger and a second passenger disembarked and did not accompany the pilot on the return flight to FYV.

The pilot departed SGT at 1649 and proceeded on a northwest course direct to FYV, climbing to a cruise altitude of 4,500 ft mean sea level (msl). At 1746, about 18 miles southeast of FYV, the airplane entered a descent as it remained on course direct to FYV. The average airplane descent rate during this time was about 425ft/min. About 1752:22, the airplane entered a left turn from an altitude of about 1,875 ft. It remained in the left turn until the final ADS-B data point at 1752:33. The altitude associated with the final data point was 1,625 ft msl. The airplane was on a south course, about 170°, at that time.

The pilot had contacted FYV tower and informed the controller that the airplane was about 10 miles from the airport. The controller instructed the pilot to enter a left downwind for runway 16 and cleared him to land. The pilot acknowledged the instructions. No further communications were received from the pilot.

A witness reported hearing the airplane as it approached. He recalled that the engine sounded as if it was going to lose power but then “revved up really high.” This cycle occurred 3 or 4 times over a span of 10-15 seconds. The engine seemed to stop; however, he was unsure if the airplane had simply descended behind a ridgeline. He did not hear the impact nor was he able to see the airplane.

Commented [1]:

## Pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	43, Male
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	4-point
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 2 With waivers/limitations	<b>Last FAA Medical Exam:</b>	May 20, 2021
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	May 12, 2021
<b>Flight Time:</b>	1765 hours (Total, all aircraft), 377 hours (Total, this make and model), 80 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Beech	<b>Registration:</b>	N673V
<b>Model/Series:</b>	M35	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	1960	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	D-6273
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	5
<b>Date/Type of Last Inspection:</b>	March 22, 2022 Annual	<b>Certified Max Gross Wt.:</b>	2950 lbs
<b>Time Since Last Inspection:</b>	15 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	2904 Hrs at time of accident	<b>Engine Manufacturer:</b>	Continental Motors
<b>ELT:</b>	C91 installed	<b>Engine Model/Series:</b>	IO-470-C12B
<b>Registered Owner:</b>	MIMS MEDICAL GROUP INC	<b>Rated Power:</b>	260 Horsepower
<b>Operator:</b>	On file	<b>Operating Certificate(s) Held:</b>	None
<b>Operator Does Business As:</b>	N/A	<b>Operator Designator Code:</b>	N/A

The airplane was equipped with 2 25-gallon main fuel tanks, 1 installed in each wing. In addition, the airplane was equipped with 2 10-gallon auxiliary fuel tanks, 1 installed in each wing outboard of the main fuel tank. The fuel selector valve was located near the pilot's seat. The selector had settings for the left main tank, the right main tank, and the auxiliary tanks. The main fuel tanks were selected individually. Both auxiliary tanks were connected to a common port on the fuel selector and fed simultaneously when selected. Excess (unburned)

fuel from the engine was returned to the selected main fuel tank or, if the auxiliary tanks were selected, to the left main fuel tank.

### Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Night
<b>Observation Facility, Elevation:</b>	FYV,1252 ft msl	<b>Distance from Accident Site:</b>	3.25 Nautical Miles
<b>Observation Time:</b>	17:53 Local	<b>Direction from Accident Site:</b>	105°
<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>	3 knots / 0 knots	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	150°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30.02 inches Hg	<b>Temperature/Dew Point:</b>	12°C / -1°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Stuttgart, AR (SGT)	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Fayetteville, AR (FYV)	<b>Type of Clearance:</b>	VFR flight following
<b>Departure Time:</b>	16:49 Local	<b>Type of Airspace:</b>	Class G

Sunset was at 1717 and civil twilight ended at 1745 on the day of the accident. The moon rose at 1658 that afternoon. Moon transit and moon set were 0040 and 0818 the following morning, respectively. The moon was full with 100% of its visible disk illuminated.

### Airport Information

<b>Airport:</b>	Drake Field FYV	<b>Runway Surface Type:</b>	Grass/turf
<b>Airport Elevation:</b>	1252 ft msl	<b>Runway Surface Condition:</b>	Vegetation
<b>Runway Used:</b>	N/A	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	0 ft / 0 ft	<b>VFR Approach/Landing:</b>	Forced landing

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Fatal	<b>Aircraft Damage:</b>	Destroyed
<b>Passenger Injuries:</b>	N/A	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 Fatal	<b>Latitude, Longitude:</b>	35.991024,-94.105168

The airplane impacted trees and terrain about 185 ft south-southeast of the final ADS-B data point, which was about 3 miles from the destination airport. The airplane impact path was toward the southeast and it came to rest upright. The engine, firewall, and instrument panel were partially separated from the airframe and the cockpit area was compromised. The center fuselage was deformed, and the aft fuselage was partially separated. Both wings remained attached to the fuselage and exhibited leading edge crushing damage. The empennage remained attached to the aft fuselage.

Postaccident airframe and engine examinations did not reveal any preaccident mechanical malfunctions or failures that would have precluded normal operation.

The fuel tank caps were securely installed, and each tank appeared to be intact. About 15 gallons and 10 gallons were recovered from the left and right main fuel tanks, respectively. Both the left and right auxiliary fuel tanks contained minimal fluid. The fluid recovered was clean, free of debris or sediment, and exhibited a blue tint consistent with 100LL aviation fuel. The fuel selector was positioned to the left main fuel tank at the time of the examination.

The airplane was equipped with an electronic engine display unit. The data indicated the fuel tanks – both main and both auxiliary tanks – were full or nearly full upon departure from FYV. After takeoff, the right main fuel tank quantity decreased slightly and then remained stable for the duration of the flight. The left main fuel tank quantity then began to decrease steadily, consistent with the left main tank being selected. About midflight, the auxiliary fuel tank quantities began to decrease and the left main tank quantity began to increase, consistent with the pilot changing to the auxiliary fuel tanks.

Upon departure from SGT, the right main fuel tank quantity steadily decreased for most of the flight. Beginning about 1738, the right main tank quantity remained constant while the left auxiliary tank quantity began to decrease consistent with the pilot selecting the auxiliary fuel tanks. The left main fuel tank quantity began to increase, which was also consistent with selection of the auxiliary fuel tanks. About this time, the right auxiliary fuel tank quantity dropped out and remained at zero for the duration of the data. Shortly afterward, the left auxiliary fuel tank quantity dropped out and remained at zero for the duration of the data.

About 1750:00, the fuel flow became unstable until it abruptly decreased to zero about 90 seconds later. The fuel flow remained at or near zero for the remainder of the data set. The fuel quantities recorded by the engine display unit at the end of the recorded data set were 25 gallons in the left main tank, 8 gallons in the right main tank, and zero gallons in both auxiliary tanks.

The recorded data ended about 1752:19, which was about 14 seconds before the final ADS-B data point.

### **Medical and Pathological Information**

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An autopsy of the pilot was performed by the Deputy Medical Examiner at the Arkansas State Crime Lab (Little Rock, Arkansas). The pilot's cause of death was multiple blunt force injuries sustained in the accident.

Toxicology testing by the FAA Forensic Sciences Laboratory negative for all substances in the testing profile.

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Sorensen, Timothy
<b>Additional Participating Persons:</b>	Paul Centinaro; FAA Flight Standards; Little Rock, AR Jennifer Barclay; Textron Aviation; Wichita, KS
<b>Original Publish Date:</b>	March 28, 2024
<b>Last Revision Date:</b>	April 12, 2024
<b>Investigation Class:</b>	<a href="#">Class 3</a>
<b>Note:</b>	
<b>Investigation Docket:</b>	<a href="https://data.ntsb.gov/Docket?ProjectID=106548">https://data.ntsb.gov/Docket?ProjectID=106548</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](#).