



# Aviation Investigation Final Report

<b>Location:</b>	Houston, Texas	<b>Accident Number:</b>	CEN22LA190
<b>Date &amp; Time:</b>	May 6, 2022, 14:18 Local	<b>Registration:</b>	XB-FQS
<b>Aircraft:</b>	Cessna 421	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Fuel related	<b>Injuries:</b>	4 Minor
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

## Analysis

The pilot reported that, before the flight, the airplane was fueled with 140 gallons of Jet A fuel. Shortly after takeoff, both engines lost total power. Because the airplane had insufficient altitude to return to the airport, the pilot executed a forced landing to a field and the left wing sustained substantial damage. A postcrash fire ensued.

The investigation determined that the airplane was inadvertently fueled with Jet A fuel rather than AVGAS, which was required for the airplane’s reciprocating engines. The line service worker who fueled the airplane reported that there were no decals at the airplane fuel ports; however, postaccident examination of the airplane found that a decal specifying AVGAS was present at the right-wing fuel port. The investigation could not determine whether the same or a similar decal was present at the left-wing fuel port because the left wing was partially consumed during the postimpact fire.)

## Probable Cause and Findings

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

The fixed-base operator’s incorrect fueling of the airplane, which resulted in a total loss of power in both engines.

## Findings

<b>Aircraft</b>	Fuel - Fluid type
<b>Aircraft</b>	Fuel - Incorrect service/maintenance
<b>Personnel issues</b>	Incorrect action performance - Airport personnel

## Factual Information

### History of Flight

<b>Initial climb</b>	Fuel related (Defining event)
<b>Emergency descent</b>	Off-field or emergency landing

On May 6, 2022, at 1418 central daylight time, a Cessna 421 airplane, Mexican registration XB-FQS, was substantially damaged when it was involved in an accident near Houston, Texas. The pilot and three passengers sustained minor injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot reported that, upon arriving at the airport's fixed-base operator (FBO) facility, his son requested that the airplane be fueled with 70 gallons in each wing tank. They observed the airplane being fueled; several minutes later, the airplane was towed to their location at the FBO building. The pilot stated that the preflight inspection and taxi for takeoff were completed with no issues found. About halfway through the takeoff roll, the pilot thought that the airplane was "feeling weird" but was unable to stop on the remaining runway. The pilot continued with the takeoff; shortly afterward, the engines began losing power and the airplane had insufficient altitude to return to the airport. The pilot decided to execute a forced landing to a field ahead of the airplane's flightpath. During the forced landing, the landing gear collapsed and the airplane impacted a perimeter fence. The left wing separated outboard of the engine nacelle and the airplane came to rest in a residential backyard. A postimpact fire consumed the outboard portion of the left wing.

A representative of the FBO stated the pilot's son placed the order for fuel with a front counter customer service representative. The order was noted as "70 neg each" and confirmed with the pilot's son. The order relayed to line service was for "70 gallons each wing – negative," indicating that a fuel additive (Prist) should not be added. The type of fuel was not discussed. The airplane was subsequently fueled with 140 total gallons of Jet A fuel without the Prist additive. The line service worker who fueled the airplane reported that there were no decals at the airplane fuel ports and that, for that reason, he confirmed the order with the front desk before adding Jet A fuel to the airplane.

The airplane was powered by two reciprocating engines requiring 100/100 low-lead minimum-grade aviation fuel (AVGAS). A postaccident examination by Federal Aviation Administration inspectors found that the right-wing fuel port had decals noting "100/130 Aviation Grade Min" and "AVGAS ONLY." The decal text was faded but was clearly visible. The investigation could not determine if there were any left-wing fuel port decals because of the fire damage to the left wing. In addition, the truck used to fuel the airplane had a placard indicating "Jet A," and an elongated fuel nozzle was installed, corresponding with Jet A fueling operations.

After the accident, the FBO implemented additional communication requirements and awareness training related to aircraft fueling to prevent an incorrect fueling event from occurring.

## Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	60, 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>	3-point
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	
<b>Medical Certification:</b>	Class 2 Without waivers/limitations	<b>Last FAA Medical Exam:</b>	May 27, 2021
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	November 15, 2021
<b>Flight Time:</b>	4025 hours (Total, all aircraft), 951 hours (Total, this make and model), 3974 hours (Pilot In Command, all aircraft), 30 hours (Last 90 days, all aircraft), 10 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Cessna	<b>Registration:</b>	XB-FQS
<b>Model/Series:</b>	421 C	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	1976	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	421C-0085
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	8
<b>Date/Type of Last Inspection:</b>	November 3, 2021 Continuous airworthiness	<b>Certified Max Gross Wt.:</b>	6850 lbs
<b>Time Since Last Inspection:</b>	38 Hrs	<b>Engines:</b>	2 Reciprocating
<b>Airframe Total Time:</b>	5197 Hrs as of last inspection	<b>Engine Manufacturer:</b>	Continental
<b>ELT:</b>	C126 installed, not activated	<b>Engine Model/Series:</b>	GTSIO-520-L
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	375 Horsepower
<b>Operator:</b>	On file	<b>Operating Certificate(s) Held:</b>	None
<b>Operator Does Business As:</b>	On file	<b>Operator Designator Code:</b>	N/A

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	KHOU,46 ft msl	<b>Distance from Accident Site:</b>	2 Nautical Miles
<b>Observation Time:</b>	13:53 Local	<b>Direction from Accident Site:</b>	333°
<b>Lowest Cloud Condition:</b>	Scattered / 3200 ft AGL	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>		<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	9 knots / 0 knots	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	110°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	29.87 inches Hg	<b>Temperature/Dew Point:</b>	31°C / 23°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Houston, TX (HOU)	<b>Type of Flight Plan Filed:</b>	VFR
<b>Destination:</b>	San Antonio, TX (SAT)	<b>Type of Clearance:</b>	VFR
<b>Departure Time:</b>	14:15 Local	<b>Type of Airspace:</b>	Class B

## Airport Information

<b>Airport:</b>	William P Hobby HOU	<b>Runway Surface Type:</b>	Asphalt
<b>Airport Elevation:</b>	46 ft msl	<b>Runway Surface Condition:</b>	Vegetation
<b>Runway Used:</b>	13R	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	7602 ft / 150 ft	<b>VFR Approach/Landing:</b>	Forced landing

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Minor	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	3 Minor	<b>Aircraft Fire:</b>	On-ground
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	4 Minor	<b>Latitude, Longitude:</b>	29.609208,-95.2648

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Sorensen, Timothy		
<b>Additional Participating Persons:</b>	Tom Fowles; FAA Flight Standards; Houston, TX		
<b>Original Publish Date:</b>	August 15, 2023	<b>Investigation Class:</b>	3
<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=105048">https://data.nts.gov/Docket?ProjectID=105048</a>		

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