



Aviation Investigation Final Report

Location:	Opelika, Alabama	Accident Number:	ERA24LA152
Date & Time:	March 24, 2024 13:30 Local	Registration:	N863AU
Aircraft:	Cessna 172	Aircraft Damage:	Substantial
Defining Event	Loss of engine power (partial)	Injuries:	1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

This report was modified on April 29, 2025. Please see the public docket for this investigation to view the original report.

The pilot reported that, after starting the engine, it “sounded slightly rough” and then it ran smoothly “after a few seconds.” She continued with her engine run up and magneto check, neither of which indicated any anomalies. The pilot stated that, during the takeoff roll, the engine indications were “green,” but she was not sure of the static rpm achieved, and the airspeed was increasing “slightly slower than normal.” After reaching a rotation speed of 55 kts, the pilot rotated, but noticed during the initial climb that the engine was not producing full power, and the airspeed was low. She further characterized the engine performance as constant but sluggish. The pilot lowered the nose to prevent an aerodynamic stall and attempted a forced landing, during which the airplane impacted trees and came to rest inverted.

Postaccident examination of the airplane revealed substantial damage to both wings, the fuselage, and the engine mounts. The examination of the fuel injector assembly found a combination of fuel and oil had contaminated between the air side of the fuel injector diaphragm assembly and the regulator cover. A service bulletin from the fuel injector manufacturer stated that with this type of contamination, an engine could exhibit “gradually deteriorating idle, difficulty starting and/or cold engine acceleration performance.” With the exception of magneto timing that was 3 degrees advance of the engine’s specification, no evidence of any preimpact mechanical malfunction or failure was observed with the engine or its subsystems. Based on the available information, it

is likely that the contamination of the fuel injector assembly resulted in the lack of engine performance described by the pilot.

Probable Cause and Findings

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

A partial loss of engine power due to a combination of fuel/oil contamination in the fuel injector assembly.

Findings

Aircraft (A1)	(general) - Damaged/degraded
Aircraft (A1)	(general) - Damaged/degraded

Factual Information

History of Flight

Initial climb	Collision with terr/obj (non-CFIT)
Initial climb	Loss of engine power (partial) (Defining event)
Initial climb	Off-field or emergency landing

On March 24, 2024, at 1330 eastern daylight time, a Cessna 172S, N863AU, was substantially damaged when it was involved in an accident near Opelika, Alabama. The private pilot sustained minor injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot reported that she completed a preflight inspection of the airplane with no anomalies noted. During engine start, the engine “sounded slightly rough,” and then it ran smoothly “after a few seconds.” During the engine run-up, there were no unusual indications, and the magneto check was normal. During the takeoff roll, the engine indications were “green,” and airspeed was increasing “slightly slower than normal.” The pilot reported that she was not sure of the exact static rpm the engine reached during the takeoff roll but that it did not feel as though the engine was producing the normal amount of power. Upon reaching a rotation speed of 55 kts, the pilot rotated and began the initial climb. As the initial climb progressed, the pilot noticed the airspeed was not accelerating normally, staying about 60 to 65 kts, and the engine was only producing about 1,700-1,750 rpm, despite the throttle and mixture controls being full forward. The pilot subsequently lowered the airplane’s nose and flew toward a forced landing area. She reported that she did not see the engine rpm raise and then drop during the flight and characterized the engine performance as constant but sluggish. The airplane impacted trees and came to rest inverted during the forced landing.

Postaccident photographs showed substantial damage to both wings, the fuselage, and the engine mount. A postaccident examination of the airplane found continuity of the engine crankshaft and valvetrain. Compression and suction were observed on all cylinders in the correct firing order when the crankshaft was rotated. Both magnetos remained secure to their fittings on the accessory housing and the timing was found to be 28° before top dead center. The engine data tag showed that the timing for the engine should be 25° before top dead center. The fuel injector assembly was removed from the engine and disassembled. The examination of the fuel injector revealed a combination of fuel/oil contamination ~~on the air side of~~ between the air diaphragm (Avstar part number AV 2538295) and the regulator cover (part number AV 2577194).

Service bulletin AFS-SB10 from the fuel injector manufacturer states, “There have been occasional reports of servo equipped engines that exhibit one or more of the following characteristics - gradually deteriorating idle, difficulty starting and/or cold engine acceleration performance. These engines may have the servo mounted in an updraft, or nearly updraft configuration. Close inspection of the servo may reveal oily contaminant in the bore of the servo that is green/blue in color. It is also possible for this contaminant to migrate into the air section of the regulator.”

Occupant Information

Certificate:	Private	Age:	18, Female
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:	[SAFTIToxicologyPerformed]
Medical Certification:	Class 1 With waivers/limitations	Last FAA Medical Exam:	March 14, 2023
Occupational Pilot:	No	Last Flight Review or Equivalent:	July 31, 2023
Flight Time:	135 hours (Total, all aircraft), 96 hours (Total, this make and model), 55 hours (Pilot In Command, all aircraft), 13 hours (Last 90 days, all aircraft), 1 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N863AU
Model/Series:	172 S	Aircraft Category:	Airplane
Year of Manufacture:	2020	Amateur Built:	[SAFTIAmateurBuilt]
Airworthiness Certificate:	Normal; Utility	Serial Number:	172S12471
Landing Gear Type:	Tricycle;	Seats:	4
Date/Type of Last Inspection:	March 14, 2024 100 hour	Certified Max Gross Wt.:	2550 lbs
Time Since Last Inspection:	33.6 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	1627.6 Hrs at time of accident	Engine Manufacturer:	LYCOMING
ELT:	C126, Installed, not activated	Engine Model/Series:	IO-360-L2A
Registered Owner:	AUBURN UNIVERSITY	Rated Power:	180 Horsepower
Operator:	AUBURN UNIVERSITY	Operating Certificate(s) Held:	Pilot school (141)
Operator Does Business As:	[SAFTIOperatorDoesBusinessAs]	Operator Designator Code:	[SAFTIOperatorDesignatorCode]

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	AUO, 776 ft msl	Distance from Accident Site:	1 Nautical Miles
Observation Time:	13:56:00 Local	Direction from Accident Site:	278°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	[SAFTIVisualRange FT]
Wind Speed/Gusts:	7 knots,none	Turbulence Type Forecast/Actual:	None / None
Wind Direction:	90°	Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	30.02 inches Hg	Temperature/Dew Point:	19°C / 6°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Opelika, AL	Type of Flight Plan Filed:	None
Destination:	Opelika, AL	Type of Clearance:	None
Departure Time:	[SAFTIDepartureTime]	Type of Airspace:	Class G

Airport Information

Airport:	AUBURN UNIVERSITY RGNL AUO	Runway Surface Type:	Asphalt
Airport Elevation:	776 ft msl	Runway Surface Condition:	Dry; Vegetation
Runway Used:	11	IFR Approach:	None
Runway Length/Width:	4000 ft / 75 ft	VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Minor	Latitude, Longitude:	32.614587°, -85.421371° estimated

[SAFTISafetyMessage]

Administrative Information

Investigator In Charge (IIC):	Young, Joshua
Additional Participating Persons:	Scott Marshall; FAA/FSDO; Atlanta, GA Russel Gait; Lycoming Engines; Williamsport , PA
Original Publish Date:	April 2, 2025
Last Revision Date:	[SAFTILastRevisionDate]
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=193982

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