



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

# Aviation Investigation Final Report

<b>Location:</b>	Gainesville, Georgia	<b>Accident Number:</b>	ERA23FA163
<b>Date &amp; Time:</b>	March 25, 2023, 13:52 Local	<b>Registration:</b>	N47AR
<b>Aircraft:</b>	LARRY F PREISS AR-1	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Fuel contamination	<b>Injuries:</b>	1 Fatal
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

## Analysis

The pilot had recently resumed flying and was on a local flight in the experimental amateur-built gyroplane. After the pilot departed from his home airport, he flew for about 10 nautical miles and conducted several maneuvers. A review of video footage recovered from a camera onboard the gyroplane revealed that the engine could be heard surging before the engine noise stopped, consistent with a loss of engine power, and the gyrocopter began to descend. The pilot then appeared to conduct a forced landing attempt toward an open field. As the gyroplane neared the ground, it struck a power line that bordered the field, after which it rapidly pitched downward, and impacted the ground.

A postaccident examination of the engine revealed no evidence of any preimpact mechanical anomalies that would have precluded normal operation. Fuel samples obtained from the gyroplane's fuel tank contained a significant amount of water contamination. Engine test runs using the contaminated fuel demonstrated that the engine initially ran normally when the fuel/water mixture was agitated, but that the engine lost power and eventually stopped all together once the water and fuel settled and separated. When clean fuel was provided, the engine operated normally without any issues.

The presence of water contamination in the fuel system likely resulted in the loss of engine power observed in the video recording. The pilot's subsequent forced landing approach was affected by the presence of the powerline along his flight path, which he likely did not see prior to impacting it.

## Probable Cause and Findings

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

The pilot's inadequate preflight inspection and his failure to detect water-contaminated fuel that resulted in a loss of engine power and subsequent impact with a wire and terrain during an attempted forced landing.

## Findings

<b>Personnel issues</b>	Preflight inspection - Pilot
<b>Aircraft</b>	Fuel - Fluid condition
<b>Environmental issues</b>	Wire - Awareness of condition

## Factual Information

### History of Flight

<b>Maneuvering</b>	Fuel contamination (Defining event)
<b>Emergency descent</b>	Collision with terr/obj (non-CFIT)

On March 25, 2023, at 1352 eastern daylight time, an experimental amateur-built AR-1 gyroplane, N47AR, was substantially damaged when it was involved in an accident near Gainesville, Georgia. The private pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to the wife of the pilot, her husband wanted to fly early in the day due to the wind conditions that would be occurring later in the day. She stated that he had just recently decided to start flying again and put together the gyroplane himself but had met with a mechanic, "...in the last couple of weeks to make sure the aircraft was in good working condition." She further stated that he would typically depart from the Gainesville airport, fly to Cornelia, Georgia, where he would land, and then fly back.

Review of ADS-B data showed that the gyroplane departed the Lee Gilmer Memorial Airport (GVL), Gainesville, Georgia. The gyroplane flew north of the airport, cruising at an altitude of 2,000 ft. The ADS-B data showed that the gyroplane then made a series of turns around the Gainesville, Georgia, area before the data ended.

### Pilot Information

<b>Certificate:</b>	Sport Pilot	<b>Age:</b>	75, Male
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Front
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	4-point
<b>Instrument Rating(s):</b>	None	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 3 With waivers/limitations	<b>Last FAA Medical Exam:</b>	July 8, 2005
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	(Estimated) 85 hours (Total, all aircraft), 85 hours (Total, this make and model)		

The pilot's logbook record was not available for review.

### Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	LARRY F PREISS	<b>Registration:</b>	N47AR
<b>Model/Series:</b>	AR-1	<b>Aircraft Category:</b>	Gyroplane
<b>Year of Manufacture:</b>	2021	<b>Amateur Built:</b>	Yes
<b>Airworthiness Certificate:</b>	Experimental (Special)	<b>Serial Number:</b>	0053
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	July 29, 2022 Condition	<b>Certified Max Gross Wt.:</b>	1232 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>		<b>Engine Manufacturer:</b>	Rotax
<b>ELT:</b>	Not installed	<b>Engine Model/Series:</b>	914 UL
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	115 Horsepower
<b>Operator:</b>	On file	<b>Operating Certificate(s) Held:</b>	None

### Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	GVL, 1268 ft msl	<b>Distance from Accident Site:</b>	9 Nautical Miles
<b>Observation Time:</b>	01:53 Local	<b>Direction from Accident Site:</b>	200°
<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>	6 knots / None	<b>Turbulence Type Forecast/Actual:</b>	None / None
<b>Wind Direction:</b>	200°	<b>Turbulence Severity Forecast/Actual:</b>	N/A / N/A
<b>Altimeter Setting:</b>	29.85 inches Hg	<b>Temperature/Dew Point:</b>	19°C / 14°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Gainesville, GA (GVL)	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Gainesville, GA (GVL)	<b>Type of Clearance:</b>	VFR
<b>Departure Time:</b>	13:00 Local	<b>Type of Airspace:</b>	Class G

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Fatal	<b>Aircraft Damage:</b>	Substantial
<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>	34.415556,-83.767778(est)

An examination of the accident site revealed that the wreckage of the gyroplane was oriented on a 345° heading. The gyroplane came to rest about 100 yards from a powerline. The powerline, which was located on private property, extended across the gyroplane's estimated flightpath about 50 ft above the ground.

An examination of the gyroplane revealed that the main rotor mast was broken away from the fuselage. Both main rotor blades were buckled throughout the span of the blades. A 20-ft piece of the powerline was entangled in the rotor head. The rotor head was broken away from the mast and all push/pull tubes were impact damaged. The engine remained attached to the fuselage and all three propeller blades remained attached to the engine.

All flight control surfaces were located at the wreckage site. The tailplane broke away from the keel and was located about 15 ft in front of the cockpit. The rudder was separated from, and located about 10 ft forward of, the tailplane.

The fuel system remained intact, with the fuel cap secured in place. A fuel sample was drained from the fuel tank and the sample was light green in color and contained a visible, significant amount of water. About 6 gallons of fuel were drained from the gyrocopter, and the fuel pumps were activated to remove any remaining contaminated fuel. Water-finding paste was used to confirm the presence of water. The fuel was placed in a clear container, and visible water was observed after the fuel mixture settled,

During the follow up examination of the gyroplane a detailed examination of the engine was performed. The engine was in good physical condition and examination of the accessories proved that an engine test run could be performed. Multiple test runs were performed using both fresh fuel and the contaminated fuel drained from the gyrocopter. When the contaminated fuel that was removed from the fuel tank was used, the engine initially ran normally until the fuel and water began to separate and settle. Once the separation occurred, the engine would sputter, lose power and eventually quit. The engine was tested again using fresh fuel and the engine operated normally.

## **Flight recorders**

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A review of the onboard video recording revealed that, before the descent, the engine was heard surging. Moments later, audio from the camera was characterized as being primarily wind and rotor noise. As the gyrocopter descended, the engine's power seemed to decrease. The gyrocopter was seen approaching an open field, and the descent appeared controlled. However, as it got closer to the ground, the landing area appeared to be upsloping. A utility pole was visible in the vicinity of the field. Moments later, the gyrocopter struck a powerline, rapidly pitched downward, and then impacted the ground.

## **Medical and Pathological Information**

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An autopsy of the pilot was performed by The Georgia Bureau of Investigation, State of Georgia, Office of the Medical Examiner. According to the autopsy report, the cause of death was blunt force injuries and the manner of death was accident.

The pilot's postmortem toxicological testing did not detect any tested-for substances that were generally considered impairing.

## Administrative Information

**Investigator In Charge (IIC):** Alleyne, Eric

**Additional Participating Persons:** Jordan Paskevich; Rotech Flight Safety Inc.; Vernon B.C  
Jeff Davis; FAA/FSDO; Atlanta, GA

**Original Publish Date:** April 2, 2025

**Last Revision Date:**

**Investigation Class:** [Class 3](#)

**Note:**

**Investigation Docket:** <https://data.nts.gov/Docket?ProjectID=106954>

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