

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



CEN23FA248

INVESTIGATION SUMMARY

June 6, 2024

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A. ACCIDENT

Location: Duluth, Minnesota
Date: June 21, 2023
Time: 0719 central daylight time (CDT)
1219 coordinated universal time (UTC)
Airplane: N308ED, Aeronca 7CCM

B. PARTICIPANTS

IIC Joshua Lindberg
National Transportation Safety Board
Dallas, Texas

Investigator Damian Galbraith
National Transportation Safety Board
Denver, Colorado

FAA Inspector Greg Thurston
Federal Aviation Administration
Minneapolis, Minnesota

C. SUMMARY

On June 21, 2023, at 0714 central daylight time, an Aeronca 7CCM airplane, N308ED, was substantially damaged when it was involved in an accident near Duluth, Minnesota. The pilot and passenger were fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

NTSB IIC summary of air traffic control (ATC) communications revealed that the pilot was located at the Cirrus production ramp at DLH and requested to taxi for departure to the north. ATC cleared him to taxi to runway 3. ATC gave the pilot a departure frequency and a transponder code. The pilot responded that he did not have a transponder. ATC later cleared the pilot to depart runway 3 and proceed north. The airplane departed about 0700 CDT. When ATC requested a current altitude, the pilot responded 2,300 ft MSL (DLH field elevation 1,427.8 ft MSL). About 2 minutes after takeoff, ATC notified the pilot of nearby traffic and the pilot acknowledged. Then ATC approved frequency change for the pilot. There were no further recorded communications.

According to family and co-workers familiar with the accident flight, the airplane was used for the Cirrus flight test flying club and the airplane was reserved via their online reservation system. They stated that the pilot was likely flying up to his

private airstrip to view the area. The pilot had just completed an annual inspection on the airplane the day before the accident, so the accident flight was the first flight post annual inspection.

There were two notifications about an ELT signal in the accident area. The first notification was at 0719.

Witness Daryl Olsen thinks he heard the roar of an engine and a big, heavy crunch. He wasn't exactly sure what it was but it was around 0700 and woke him up. Then he saw airplanes flying around later and knew something was wrong.

Witness Michael Cooke and his wife were in bed when they heard a big bang, but they didn't think anything of it because of the frequent truck traffic on the road.

D. DETAILS OF THE EXAMINATION

1.0 Accident Site

The accident site was located about 19 nm northeast of Duluth International Airport (DLH). Coordinates: 47.118439° -91.983978° elevation 1,462 ft MSL

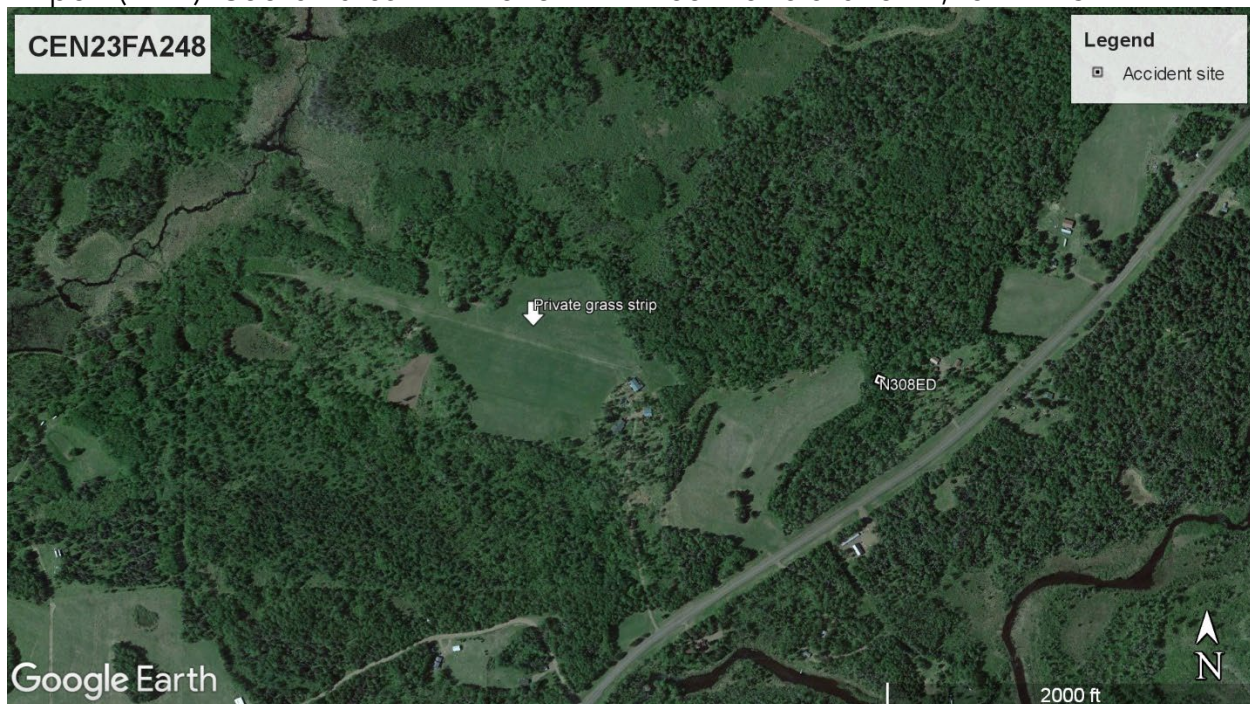


Figure 1. Google Earth image of the accident area.

The airplane was located about 30 yards into a densely wooded area. There was no damage noted to the surrounding trees or the canopy.



Figure 2. Aerial image of the accident site (Source: St. Louis Co. Sheriff's Office)

2.0 Aircraft Information

Continental C90-8F s/n 15474-72-8-R

Aeronca 7CCM CONV s/n 7AC-2952 Mfr Year: 1946

The pilot has flown this airplane in the past and he had just completed the airplane's annual inspection on 6/20/2023. There were no outstanding discrepancies noted in the maintenance logbook entries.

Weight and Balance

N308ED	S.N. 7AC-2952	Model No. 7CCM	
	Scale Reading	Datum	Moment
Left Wheel	416 lb	0.0	0
Right Wheel	416 lb	0.0	0
Tail Wheel	78 lb	193.0	15,054
Total	910		15,054
$15054 / 910 = 16.54$			
Aircraft Empty Weight	Empty WT. C.G.	15054	
910	16.54	15054	
Aircraft Gross Wt.	Useful Load		
1300	390		
Aircraft weighed with 4 Qts, of oil in engine			
ELT installed at 48" Aft. Of datum			
Com. And Transponder installed 9.5 Lbs.			
C.G. Range (+16.8) to (+20.0) at 1300 Lbs.			
(+10.0) to (+20.4) at 1087 Lbs.			
Oct.13, 2021			

Figure 3. Weight and balance information (Source: airplane owner)

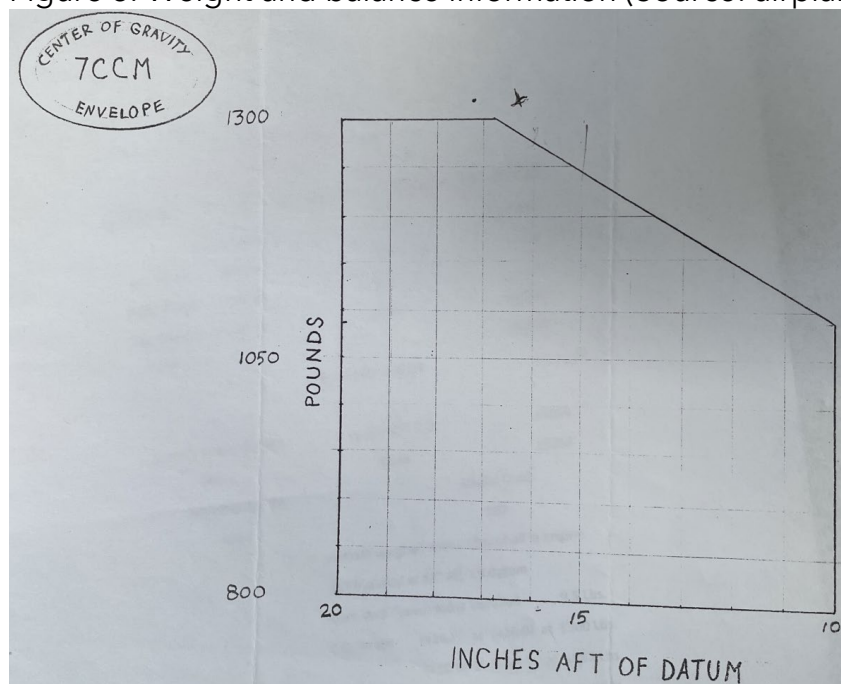


Figure 4. Center of gravity envelope (Source: airplane owner)

Assuming full fuel (13-gals main tank) at departure, and about 11 gals at the time of the accident, with a fuel burn of 4.24 gph, the airplane would have used about 2 gals for startup, taxi, takeoff, climb, cruise, and one fly over the private strip. Arms are directly from TCDS, weights are from the police report, and there was no appreciable baggage. Airplane owner was not sure if aux tanks were at 1.5 gals each, which is a rule in the flight club manual. However, since 2.5 gals were drained from the right aux tank, the calculations below will assume 5 gals total for both aux tanks. The owner was also not sure how much was in the main tank on takeoff. Since the pilot had just completed the annual inspection and no one had flown it since May 31, 2023, the amount of fuel in the main tank was unknown.

Item	Weight	Arm	Moment
EW	910	16.54	15051.4
Fuel	<u>66</u>	-15	<u>-990</u>
Fuel (aux)	<u>30</u>	24	<u>720</u>
Pilot	<u>240</u>	11.5	<u>2880</u>
Pax	<u>190</u>	42	<u>8740</u>
Baggage	<u> </u>	68	<u> </u>
TOTALS	1436		<u>26401.4</u>
CG		<u>18.39</u>	

3.0 Airframe Examination

The airplane impacted terrain with the right wing low and came to rest in a nose down attitude. The right wing leading edge was crushed aft. The left wing was mostly straight with minimal leading edge damage. The pitot tube sustained impact damage but there were no visible blockages. The fuselage and empennage were bent over to the right. The empennage was mostly unremarkable. The cockpit and instrument panel sustained impact damage. There was no electrical system installed in the airplane. Fuel control was positioned ON. There was red paint transfer from the control handle to its installed position in the side panel. The fuel selector handle was positioned to BOTH. Fuel selector continuity was established with low pressure air from the main tank to the gascolator. The gascolator bowl was not located on scene. The gascolator filter housing remained mounted to the firewall and drain assembly was observed but disconnected. The gascolator filter screen was clear of debris. The fuselage main fuel tank was impact damaged, breached, and absent of fuel. There was blue colored aviation gasoline was found pooled in the cockpit area underneath the tank. During the wreckage recovery, about 2.5 gals of fuel were recovered from the right aux tank. The left aux tank was breached, and no fuel was recovered; however, fuel was observed leaking from the wing area during the recovery process. Left and right aux tanks were selected to OFF. Primer was unlocked and fully forward with impact damage noted in that area of the cockpit. Cabin heat was OFF.

Carburetor heat was ON but the cable assembly was separated from a cut during the occupant extraction. Elevator trim was partially nose up, and the control was impact separated. Elevator trim control cables were separated at the cockpit attach point. Flight control continuity was established through 1 overload and 1 recovery cut separation. All instruments remained in the respective locations in the instrument panel. Tach time: 1,971.40.

Both 3-point harness assemblies remained latched but were cut during recovery on the left side lap belts. Both shoulder webbings were separated at the Y junction threading. All harnesses remained attached to their respective attach points. Front and back seats remained attached to their respective attach points. The front seat back was impact separated. Forward flight control stick was impact damage and separated near the top of the handle. The rear stick was impact damaged. Stick control continuity was established. Left aileron drive cable was recovery cut. Aileron control cable continuity was established from the cockpit to the aileron control surfaces, with recovery cuts noted. Rudder control cables remained attached to their respective attach points. Left rudder control cable recovery was cut at the rear seat area. Control continuity was established from the cockpit to the rudder control surface. Elevator control cable remained attached to the respective attach points and continuity was established. There were no preimpact mechanical malfunctions or anomalies noted with the airframe that would have precluded normal operation.

ELT activated at impact and according to the first responders was turned OFF during the victim recovery process. During the examination, the ELT was found mounted in its tray and the switch was OFF. The antenna remained attached.

4.0 Engine/Propeller Examination

The engine remained attached to the engine mount. Engine and engine mount exhibited impact damage. The propeller remained attached to the crankshaft flange. The engine was mostly buried in the soil, with the top of the engine visible. Top four spark plugs were removed and there were no anomalies noted with electrodes but there were some small lead deposits inside the plug behind the electrodes. Compression and suction were obtained from all four cylinders when rotated via the propeller. Crankshaft continuity was established to the rear gear with no anomalies noted at the rear gear train. Oil sump was impact damaged and deformed from impact with an engine mount, and there was about four quarts of oil remaining in the sump. Oil filter screen was removed and a few small particles of ferrous material were noted in the screen. Left and right magnetos remained attached at their respective mounts. When manually rotated, both magnetos produced a spark at all terminals and the impulse couplings operated without anomalies. Carburetor remained attached to the induction manifold and the manifold was impact fractured. The induction air box remained attached to the carburetor and was crushed. The air filter was crushed and obstructed with organic material/mud. No anomalies noted to

the heat muffs and no obstructions were noted in the exhaust system. Mixture control was safety wired to the full rich position. There was no mixture control cable installed in the airplane. Throttle control cable remained attached and was found near mid travel, but the position could not be verified due to impact damage. Fuel inlet screen was clear of debris and obstructions. When the butterfly valve was opened, the accelerator pump ejected fuel. Upon disassembly of the carburetor, no anomalies were noted to the venturi or float assembly. A blue liquid was noted in the bowl and there was no water present when tested with a water finding paste.

One propeller blade was bent aft about mid span and the other blade was relatively straight with no noticeable bending. Both blades exhibited leading edge gouges and chordwise abrasions. At the accident site, underneath the right wing and near the engine area, there were several tree branches that exhibited 45° cuts and visible paint transfer from impact with the rotating propeller.

No preimpact mechanical malfunctions or anomalies were noted with the engine or propeller that would have precluded normal operation.

5.0 Garmin GPSmap 496

A handheld Garmin GPSmap 496 was found in the wreckage in front of the engine and was secured by the Sheriff's Office. The NTSB extracted the data from the unit which revealed the following information about the accident flight:

The tabular data revealed that the airplane departed DLH at 0659 and proceeded northeast. The airplane approached the private grass strip from the south and entered a left downwind for the east runway. The airplane continued in the left pattern and descended to about 100 ft AGL and flew the runway easterly heading at 58 MPH. While continuing on the runway heading, the airspeed increased to 64 MPH, then decelerated to about 60 MPH during the initial climb out. The airspeed continued to decrease during the climb to 54 MPH. The airplane made a left turn at 220 ft AGL and 54 MPH. The final recorded GPS point was 45 yards southeast of the accident site.

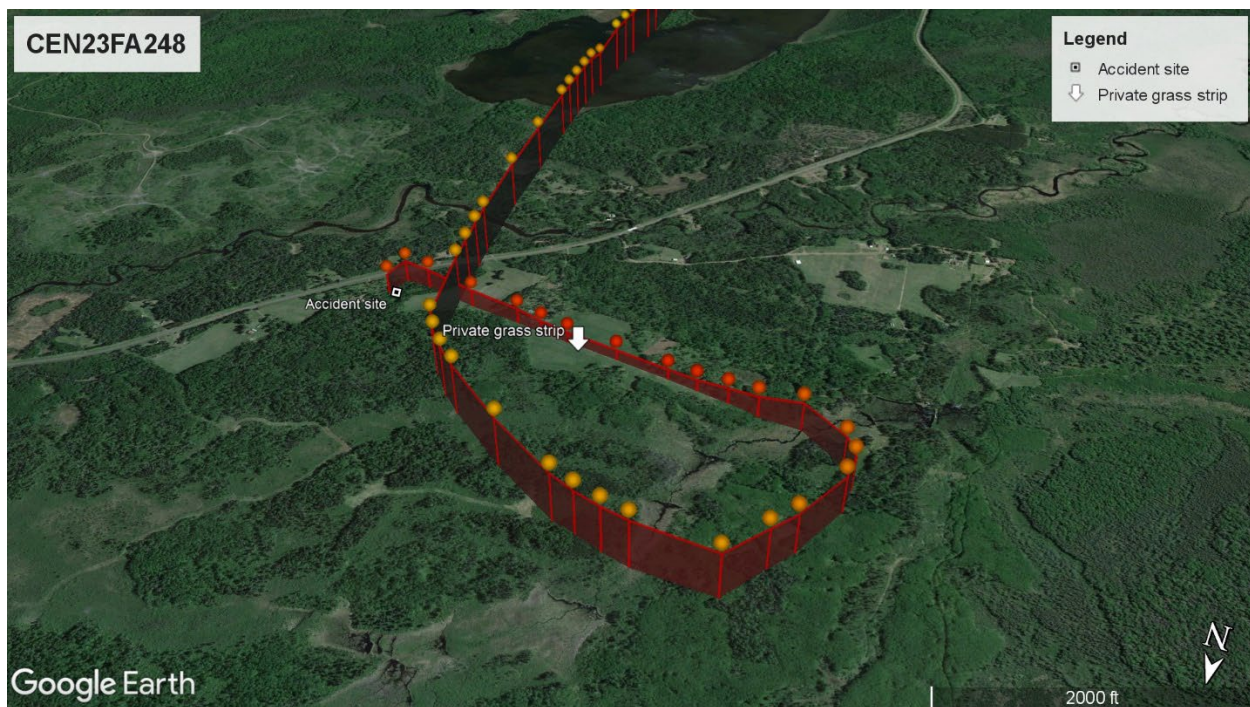


Figure 5. Grass strip and accident site location with the accident flight track

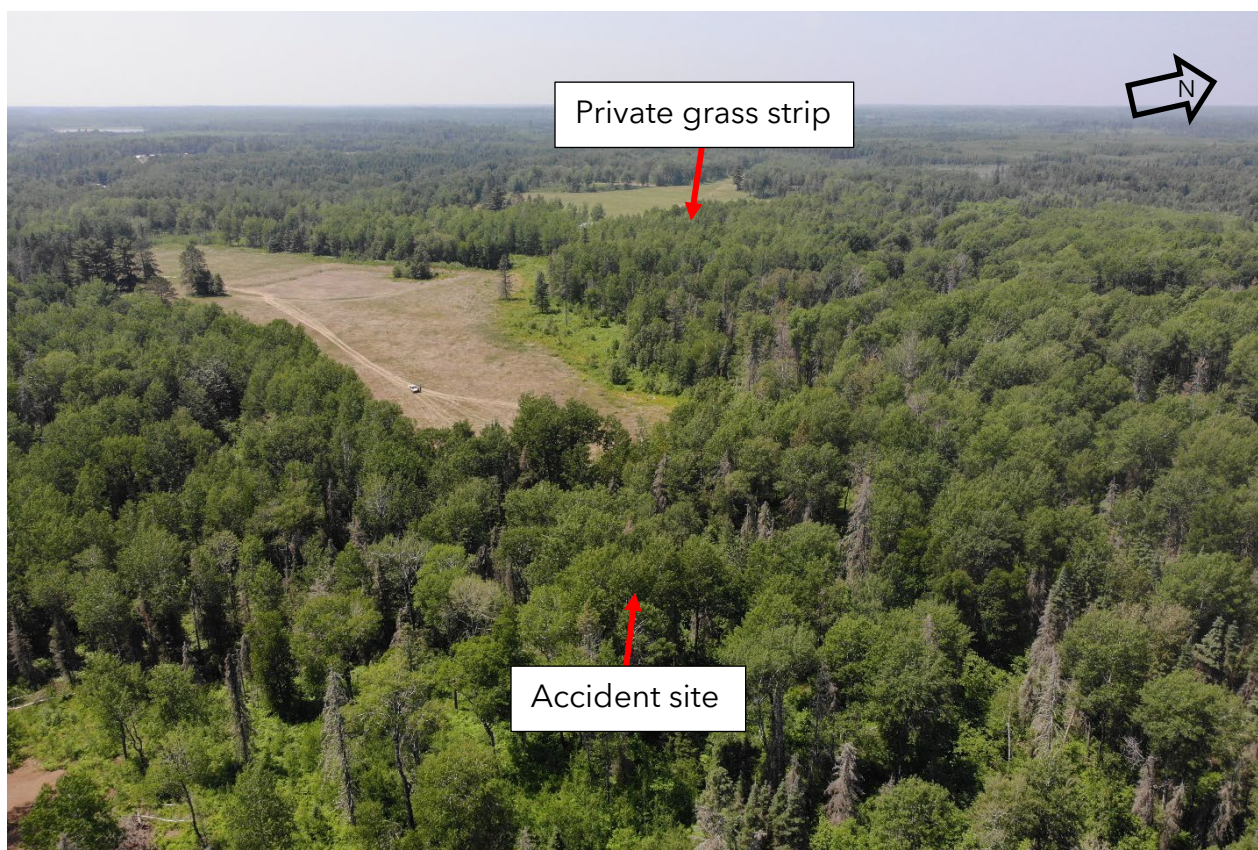


Figure 6. Aerial image of accident site and airstrip (Source: St. Louis Co. Sheriff's Office)

6.0 Pilot Information

Pilot MID, Pilot Certificate (PRIVATE PILOT ASEL; MECHANIC; REPAIRMAN), was a 60-year-old male. This pilot reported civil flight experience that included 610 total and 10 hours in last six months as of exam dated 9/8/2022. This pilot was 71 inches tall and weighed 246 lbs. at the time of the last exam. The last exam was conducted by Aviation Medical Examiner (AME) 1612. This pilot was issued a Third Class Medical Certificate with the following limitation: "Must have available glasses for near vision."

The pilot completed a flight review on October 20, 2022. According to the airplane's flight logs, the pilot had accumulated 17.74 hours in the accident airplane. The pilot logged 12.5 hours in the accident airplane in his personal flight logbook.

7.0 Meteorological Information

KTWM 211035Z AUTO 00000KT 10SM CLR 10/10 A3014 RMK AO2
KTWM 211055Z AUTO 00000KT 10SM CLR 11/11 A3014 RMK AO2
KTWM 211135Z AUTO 00000KT 10SM CLR 12/12 A3014 RMK AO2
KTWM 211155Z AUTO 00000KT 10SM CLR 14/13 A3014 RMK AO2
KTWM 211215Z AUTO 07004KT 10SM CLR 17/13 A3013 RMK AO2
KTWM 211235Z AUTO 06003KT 10SM CLR 17/13 A3013 RMK AO2
KTWM 211255Z AUTO 07004KT 10SM CLR 18/13 A3013 RMK AO2
KTWM 211316Z AUTO 07003KT 10SM CLR 19/13 A3014 RMK AO2

Submitted by:

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