

# National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR23FA258

**AIRWORTHINESS**

July 11, 2023

## TABLE OF CONTENTS

|                                             |    |
|---------------------------------------------|----|
| A. ACCIDENT.....                            | 3  |
| B. AIRWORTHINESS .....                      | 3  |
| C. SUMMARY .....                            | 3  |
| D. DETAILS OF THE EXAMINATION.....          | 9  |
| 1.0 ACCIDENT SITE .....                     | 9  |
| 2.0 AIRFRAME EXAMINATION.....               | 10 |
| 2.1 Fuel/Fuel System.....                   | 11 |
| 3.0 ENGINE AND PROPELLER EXAMINATIONS ..... | 11 |

## **A. ACCIDENT**

Location: San Rafael, CA  
Date: July 8, 2023  
Time: 2201 Mountain standard time  
Airplane: N4922G, Cessna C172  
Operator: Kirk Hurford, Co-owner

## **B. AIRWORTHINESS**

|                   |                                                    |
|-------------------|----------------------------------------------------|
| IIC               | Dan Baker<br>NTSB<br>Tucson, AZ                    |
| Party Coordinator | Josh Trimeloni<br>FAA<br>Sacramento, CA            |
| Party Coordinator | Ricardo Asensio<br>Textron Aviation<br>Wichita, KS |
| Party Coordinator | Mark Platt<br>Lycoming Engines<br>Phoenix, AZ      |

## **C. SUMMARY**

On July 8th, 2023, at 2201 Pacific Daylight Time, a Cessna C172N, N4922G, was substantially damaged when it was involved in an accident near San Rafael, California. The pilot was seriously injured and the passenger was fatally injured. The airplane was operated as a Title 14 Code of Federal Regulations (CFR) Part 91 personal flight.

The airplane was based at Sonoma County airport (STS).

Records and refueler testimony indicate the airplane was topped off with 15.3 gallons of fuel at 1841 on July 7th. ADS-B data indicates the airplane departed STS at 1912 on July 7th and arrived at San Rafael airport (CA35) at 1940. The airplane remained overnight at CA35 before departing at 1000. The airplane arrived Silver Springs airport, Nevada (SPZ) at 1150. According to the pilot's spouse the pilot intended on refueling the airplane at SPZ before returning to CA35. Fuel was available at SPZ, however, personnel were not available to operate the necessary

equipment to refuel the airplane. The airplane subsequently departed Silver Springs about 1900 and landed at Minden-Tahoe Airport (MEV), Nevada, about 1930. Fueling records show the pilot purchased 22.63 gallons of 100 LL fuel at MEV utilizing the self-service fuel pump.

```
*****
Northern Nevada Aviation LLC
[REDACTED]
Minden, NV 89423
M4000-4001409
7/8/2023 7:43:14 PM
*****

FUEL: 100 LL
PUMP: 100 LL
Units: 22.630 US Gallons
Unit Price: [REDACTED]
Sub Total: [REDACTED]

Invoice #: 103098
SALE TOTAL: [REDACTED]

PAYMENT AMOUNT: [REDACTED]
VISA
CARD: **** * 1659
EXP: 2026-03
NAME: HURFORD/KIRK
Approval Code: 01820G

TIMEOUT
Please keep this receipt for your records
THANK YOU
.
```

Figure 1 - Refueling Receipt

The airplane departed MEV at 2000, and ADS B data shows the airplane circled over MEV and climbed from about 4,600 ft msl to about 12,500 ft msl before proceeding direct to CA35. The airplane maintained about 12,500 ft until about 65 miles northeast of CA35, where it began an enroute descent. Airplane maintained 90-110 kts during the descent on a heading of about 240° until about 2159. During the remainder of the flight the airplane continue to slow and descend, with the airplane slowing to 43 kts at 500 ft at 2200:17. The airplane continued to descend, and groundspeed increased until the last data return, which indicated 70 kts at 0 ft about 0.4 miles northeast of the approach end of runway 22 at CA35. The accident site was located about 0.2 miles northeast of the approach end of runway 22 at CA35. See Figures 2 - 6

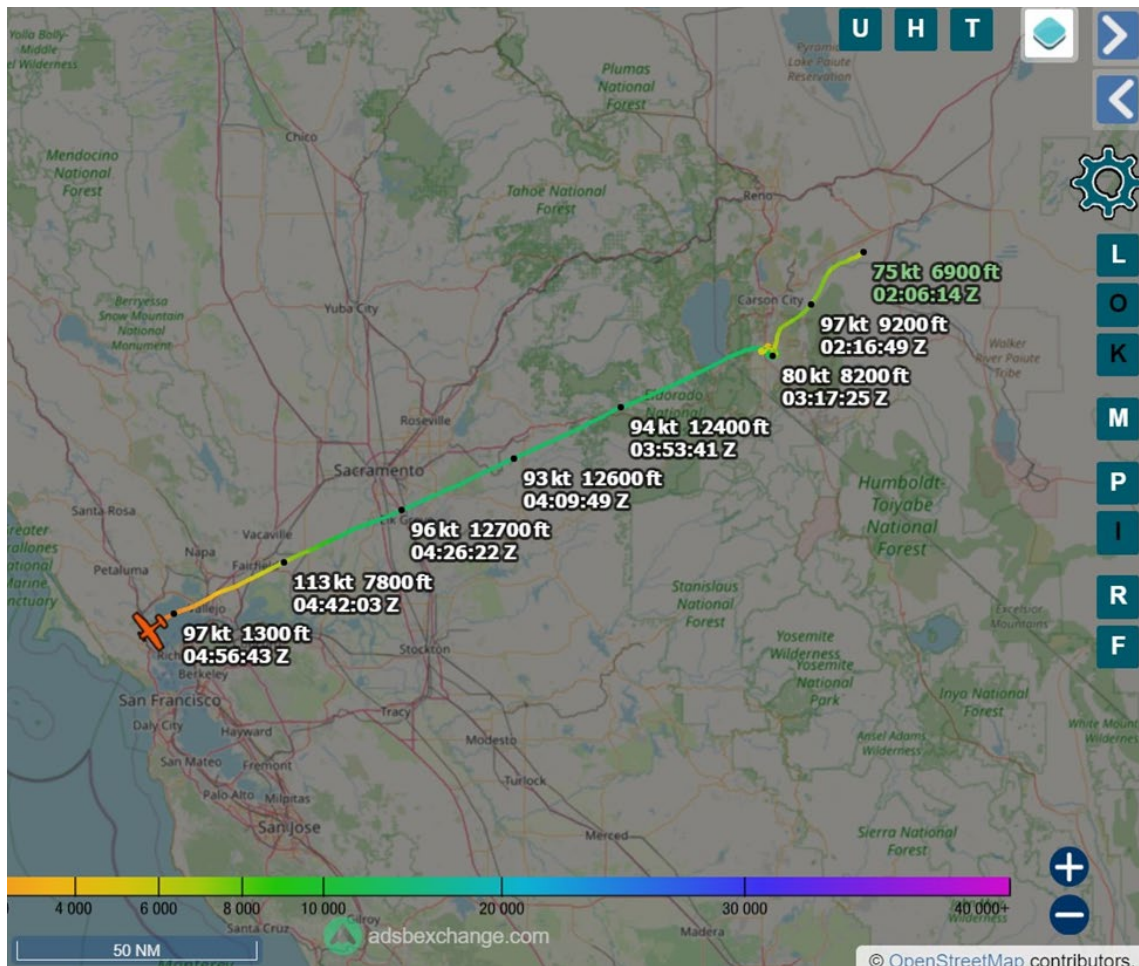


Figure 2 - ADS-B Track (Entire Route)

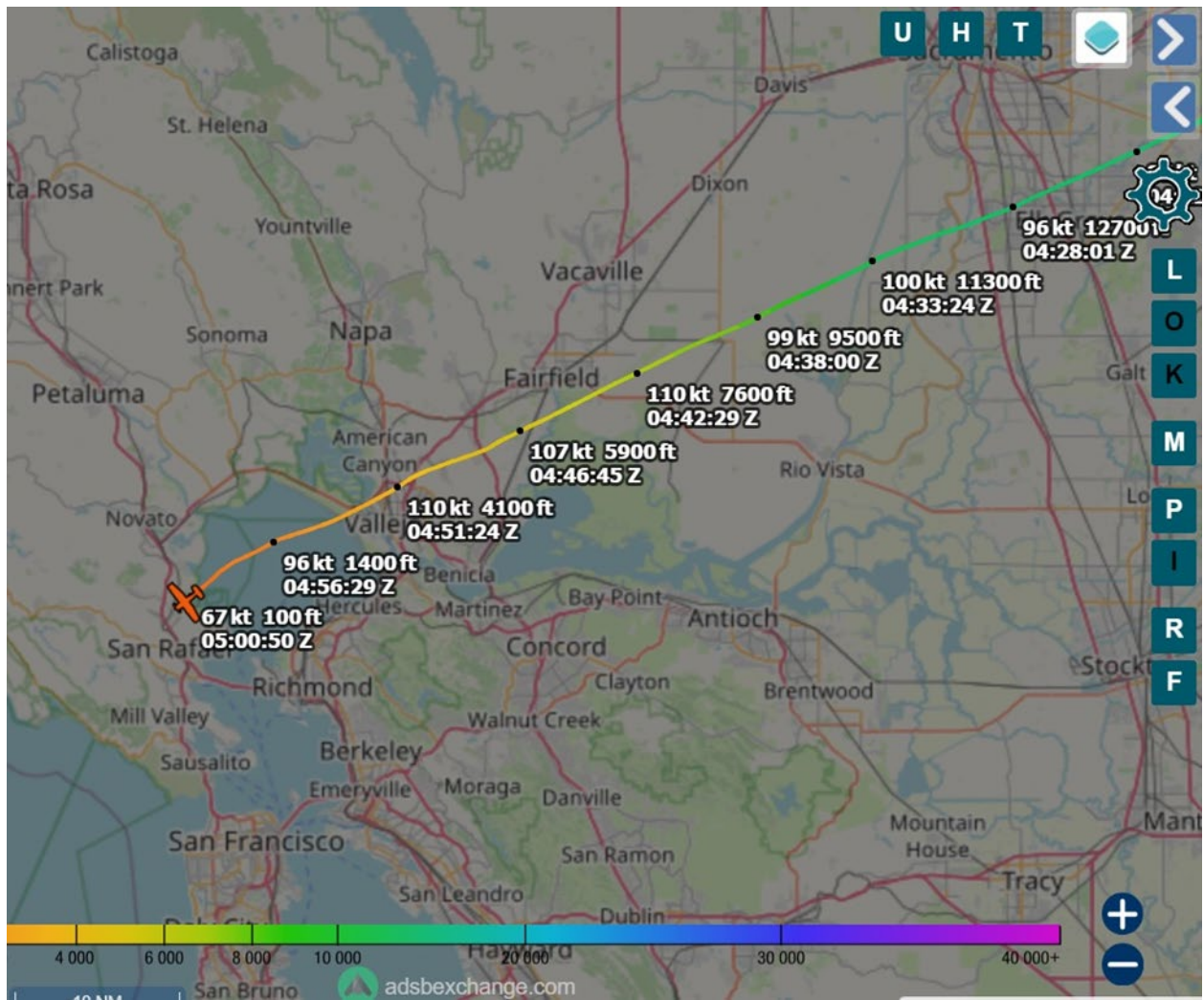


Figure 3 - ADS-B Overview 2

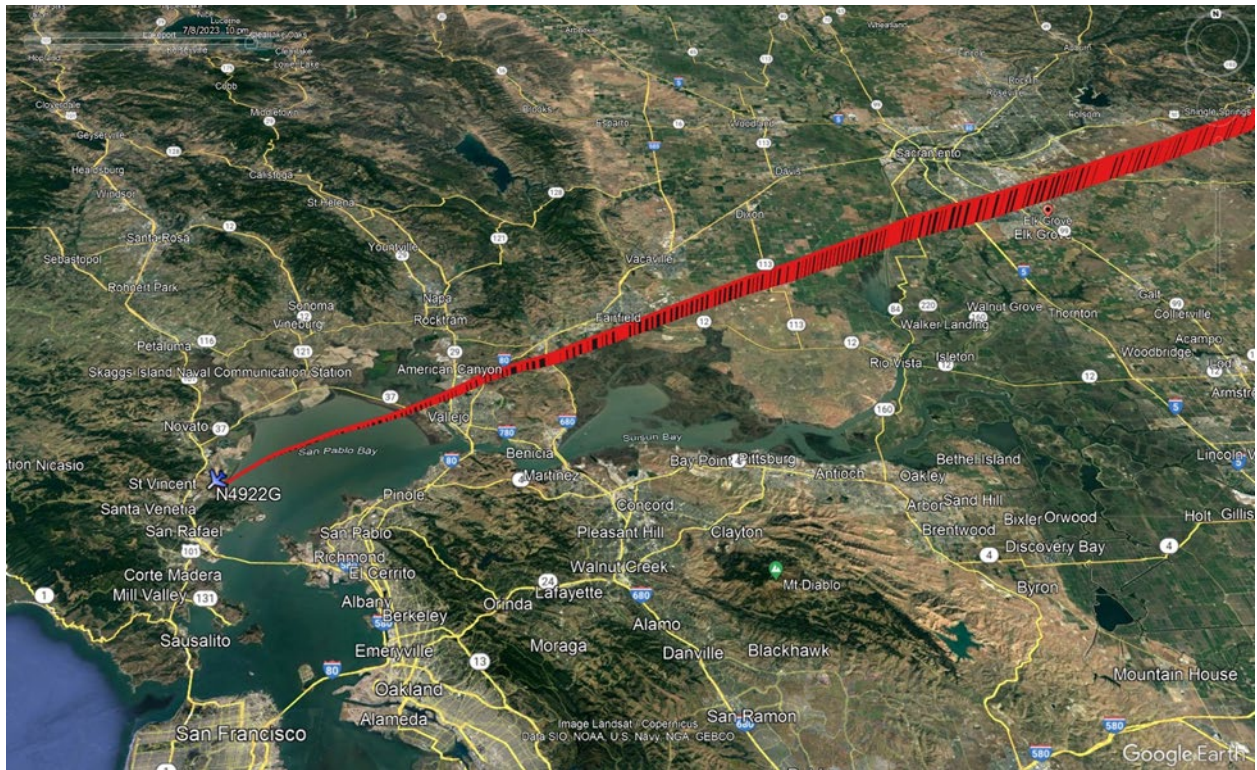


Figure 4 - Flight Profile View (GoogleEarth)

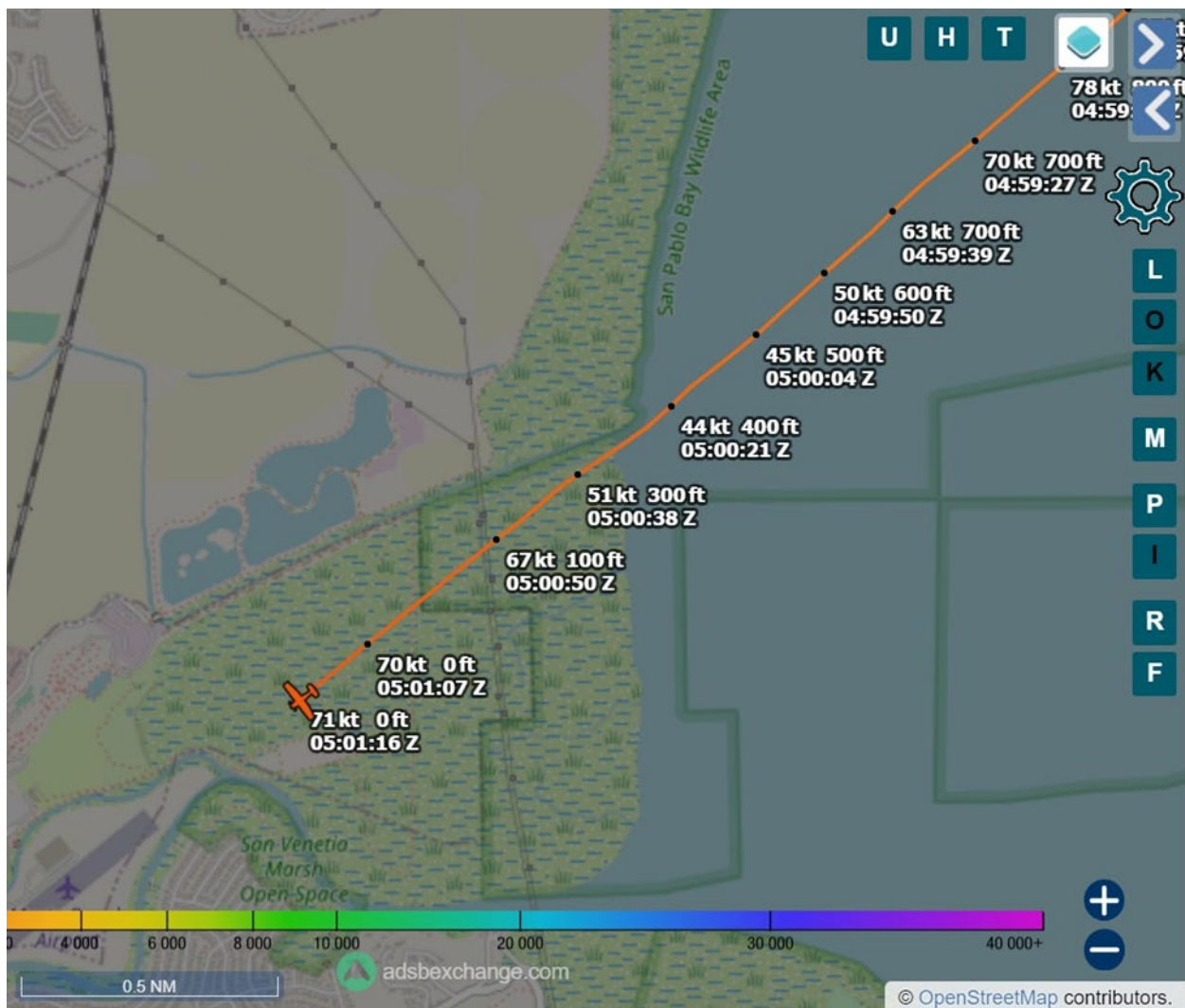


Figure 5 - ADS-B Final Approach to Airport



Figure 6 - Final Approach Profile (Google Earth)

## D. DETAILS OF THE EXAMINATION

### 1.0 Accident Site

All four corners of the aircraft were observed. The aircraft came to rest inverted about 161' from the initial impact on a slight down sloping wet embankment adjacent to a water way in a 58° MH and 952' from the approach end of runway 22 at San Rafael Airport (CA35), San Rafael, CA (figure 7). The aircraft collided with high tension wires which were about 30 ft high while approaching runway 22 at CA35.

Elevation: 5 feet, Latitude: N 38° 01'14.38" (GPS), Longitude: W 122° 30'54.00" (GPS)

The wreckage was partially submerged in water, partially inverted, and oriented with the nose pointed in an easterly direction (figure 6).



Figure 7 - Airplane Wreckage

## 2.0 Airframe Examination

- The top of the fuselage was pushed aft separating both forward door posts.
- Both wings remained partially attached to the fuselage by cables.
- Both fuel tanks pick up lines were breached.
- Arcing signatures were observed on the right-wing tip, one of the propeller blades and both wing struts.
  - Powerline cable striations signatures were observed on both wing struts and in both sides of the empennage.
  - An approximately 1" diameter cable was wrapped around the rudder and both horizontal stabilizer and elevators.
  - The right-wing strut was severed by the powerline cable about 16" from the fuselage attachment.
  - The left-wing strut was severed by the powerline cable about 39" from the fuselage attachment.

Flight control cable continuity was established from all surfaces to the cockpit controls. The flaps were observed in the up position. Flight control cables were cut for recovery.

## **2.1 Fuel/Fuel System**

The fuel selector valve was in the "Both" position. All fuel selector valve positions were tested with compressed air and the valve operated as designed, no fuel was present in the lines. A small amount of blue in color liquid consistent with fuel was found in the strainer bowl. A large amount of water was also present in the strainer bowl (Note: The engine was submerged in water at the accident scene). A fuel smell was noticed when the right tank fuel cap was opened.

## **3.0 Engine and Propeller Examinations**

The metal two bladed fixed pitch propeller remained attached at the crankshaft flange. The impact damaged spinner was attached to the propeller. The propeller blades remained attached to the propeller hub. One propeller blade exhibited witness marks (about midspan) and arching consistent with contacting an energized powerline. The subject propeller blade tip was missing a corner section of material and exhibited arching signatures. Both propeller blades remained straight and essentially undamaged.



Figure 8 – Propeller Blades (Courtesy of Lycoming Engines)

The carburetor remained undamaged and securely attached at the mounting flange. The throttle/mixture controls were found securely attached at their respective control arms of the carburetor. Control continuity to the cockpit was established. The castellated nut and cotter pin remained secure and the serrated interface at the throttle arm remained securely mated.

The carburetor was opened for examination. The fuel bowl contained fluid consistent with the appearance of water. The plastic float assembly remained secure at the mounting and free of damage. The float pontoons exhibited no evidence of rubbing against the wall of the bowl. All internal locking tabs and safety devices of the carburetor were in place and properly secured. The fuel inlet screen was found properly installed and free of pre-impact contamination. No external fuel staining was observed. The Carburetor heat was on/hot at the cockpit control and carburetor heat box lever.

All engine compartment fuel lines were found to be in place and secure at their respective fitting of each fuel system component. The fuel system utilizes gravity fed fuel, there is no engine driven fuel pump. The carburetor and induction system were examined and observed to be free of obstruction.

The engine remained attached to the airframe by the engine mount. The engine had sustained no significant impact energy damage. Visual examination of the engine revealed no evidence of pre-impact catastrophic mechanical malfunction or fire.

The top spark plugs were removed, examined and photographed. The crankshaft was rotated by hand utilizing the propeller. The crankshaft was free and easy to rotate in both directions. "Thumb" compression was observed in proper order on all four cylinders. The complete valve train was observed to operate in proper order and appeared to be free of any pre-mishap mechanical malfunction. Normal "lift action" was observed at each rocker assembly. Clean, uncontaminated oil was observed at all four rockerbox areas. Mechanical continuity was established throughout the rotating/reciprocating group, valve train and accessory section during hand rotation of the crankshaft. The bottom spark plugs were not removed.

The left and right magnetos remained securely clamped at their respective mounting pads. The ignition harness was secure at each magneto. The left magneto was found securely clamped at the mounting pad. The magneto to engine timing was observed at 20° BTDC of the cylinder no.1. The magneto was removed and the impulse coupler drive was found intact and properly safety wired. The magneto would not produce spark during hand rotation of the drive. Further examination found that the contact points were operating normally; however, the contact surfaces had been compromised due to salt water emersion, rendering the unit unsuitable for testing.

The right magneto was found securely clamped at the mounting pad. The magneto to engine timing was observed at 25° BTDC of the cylinder no. 1. The magneto was removed and the impulse coupler drive was found intact and properly safetied. The magneto was observed to produce spark at all four plug leads during hand rotation of the drive.

The combustion chamber of each cylinder was examined through the spark plug holes utilizing a lighted borescope. The combustion chambers contained a mixture of water and organic material. There was no evidence of foreign object ingestion or detonation. The valves were intact and undamaged. There was no evidence of valve to piston face contact observed. The gas path and combustion signatures observed at the exhaust system components displayed coloration consistent with normal operation. There was no oil residue observed in the exhaust system gas path. The exhaust system was found free of obstructions.

There was no evidence of pre-impact mechanical malfunctions observed during the examination of the engine.

Submitted by:

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