

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



CEN22FA197

N73670 - AIRFRAME AND ENGINE EXAMINATION REPORT

March 28, 2023

TABLE OF CONTENTS

A. ACCIDENT.....	3
B. N73670 - AIRFRAME AND ENGINE EXAMINATION REPORT.....	3
C. DETAILS OF THE EXAMINATION.....	3
1.0 ACCIDENT SITE	3
2.0 AIRFRAME EXAMINATION (CESSNA 172N, SERIAL NUMBER 172267604).....	4
3.0 ENGINE EXAMINATION (LYCOMING ENGINES O-320-H2AD, SERIAL NUMBER L-7846-76T) 5	
4.0 PROPELLER EXAMINATION (McCAULEY, 1C160DTM7557, SERIAL NUMBER 725864)6	
5.0 MAINTENANCE RECORDS REVIEW.....	7

A. ACCIDENT

Location: Broomfield, Colorado
Date: May 11, 2022
Time: 1235 Local Time
Airplane: N73670, Cessna 172N

B. N73670 - AIRFRAME AND ENGINE EXAMINATION REPORT

IIC	Mike Hodges National Transportation Safety Board Aurora, Colorado
Investigator	Ryan Teilhaber National Transportation Safety Board Aurora, Colorado
Party Coordinator	Keith Burke, aviation safety inspector (airworthiness) Federal Aviation Administration Denver, Colorado
Party Coordinator	Andrew Hall, chief air safety investigator Textron Aviation Wichita, Kansas

C. DETAILS OF THE EXAMINATION

1.0 Accident Site

- The airplane came to rest at the intersection of Interlocken Loop and Eldorado Boulevard in Broomfield, Colorado. The airplane came to rest at the northern section of the intersection on the sidewalk.
- The investigative team arrived at the accident site on May 11, 2022.
- The airplane was destroyed from a postimpact fire.
- There was one person onboard, the pilot, and he sustained fatal injuries.
- There were no ground injuries.
- The initial impact point was a large rock south of the intersection. The elevation was 5,480 ft above msl, and the heading was 17°.
- The initial impact point to the second impact point was 59 ft.
- The second impact point was a grass area south of the intersection. The elevation was 5,480 ft above msl and heading of 19°.

- Just prior to the second impact point, were two ground impact marks, consistent with propeller blades strikes. The first was 2 ft and 7 inches in width, and the second was 1 ft and 10 inches in width. Between the two marks, was a distance of 3 ft and 6 inches.
- The second impact point to the third impact point was 63 ft.
- The third impact point was a traffic light pole point south of the intersection. The traffic lights sustained impact damage from the airplane. The elevation was 5,470 ft above msl and a heading of 353°.
- The third impact point to the fourth impact point was 62 ft.
- The fourth impact point was an impact point in the asphalt lanes (southernmost) of Eldorado Boulevard, just to the north of the traffic light pole. The elevation was 5,470 ft above msl and a heading of 20°.
- The fourth impact point to the final impact point was 113 ft.
- The final impact point, where the wreckage came to rest at was on the northwest sidewalk section of the intersection. The final heading of the wreckage was 155° and at an elevation 5,470 ft above msl.
- Between the various impact points, various airplane debris was scattered northbound.
- The propeller was found separated 40 ft from the engine, on a heading of 324°
- The engine was found separated 58 ft from the airframe, on a heading of 34°
- All the major structural components were found at the accident site.
- There was no evidence of any large trees, power lines, towers, or buildings impacted by the airplane.
- The pilot was removed from the wreckage before the NTSB IIC arrived. First responders did not have to cut or remove any airframe components to remove the pilot.
- The intersection was shut down by law enforcement during the onsite documentation portion and then was reopened once the wreckage was removed.
- The airplane had insurance coverage. The wreckage was recovered from the accident site by Beegles Aircraft Service and transported to their facility in Greeley, Colorado, on May 11, 2022.

2.0 Airframe Examination (Cessna 172N, Serial Number 172267604)

- The wreckage was laid out and examined at Beegles Aircraft Service in Greeley, Colorado. The wreckage examination was held on May 12, 2022, and May 13, 2022.
- The wreckage was destroyed by a postimpact fire.
- Flight control continuity was established.

- There were no signs of the flight controls being jammed or being interfered with.
- The right wing was somewhat intact but sustained impact and fire damage.
- The left wing was mostly destroyed.
- The cockpit, cabin, tail, and most of the empennage was destroyed.
- The flaps were position at ~30° at the time of impact.
- There was no evidence of an asymmetric flap deployment occurring in the accident.
- All impact signatures observed were consistent with overstress.
- No signs of snarge were observed in the wreckage.
- The fuel system was destroyed.
- The fuel selector was found between the “both” and the “left tank” position.
- No fuel samples were obtained from the airframe.
- The cockpit was destroyed, and no gauge readings were obtained.
- The seats and seatbelts were destroyed.
- The airframe controls were destroyed.
- The muffler was examined, opened, and no signs of deterioration or pre-existing leaks were observed. This model of muffler does not have baffles.
- The landing gear (tricycle format) was separated from the airframe and destroyed.
- There were no airframe recording devices found in the wreckage.
- There were no large bags or cases found in the wreckage.
- No signs of preimpact mechanical malfunction or failure were noted with the airframe.

3.0 Engine Examination (Lycoming Engines O-320-H2AD, Serial Number L-7846-76T)

- Airframe to engine control continuity could not be confirmed due to the engine being separated from the airframe during the impact sequence.
- The engine case and cylinders appeared intact, however the forward outboard portion of cylinder #1 sustained impact damage.
- All 8 spark plugs were removed and examined. All sparkplugs showed signs consistent with the “normal-worn” signatures as shown on the Champion Aerospace Aviation-Check-A-Plug chart.
- Thumb compression was obtained for all cylinders, except for cylinder #1. The crankshaft could not be rotated by the flange. The crankshaft was rotated by the accessory port on the rear of the engine via a bit and socket. Full rotation could not be obtained due to impact damage sustained to the #1 cylinder, only half rotation could be obtained. Intake and exhaust valve rocker arm

movement appeared to move in the correct firing order when rotation occurred (except for the #1 cylinder).

- The rocker covers were removed due to facilitate the examination.
- For the number one cylinder, the forward rod was missing and was not recovered. The lifter was found ejected from the engine and was recovered. Only one rocker cover was recovered, and the other was not recovered. The #1 cylinder rocker cover was not recovered.
- The carburetor was found intact and was connected to the engine. It was removed and disassembled. The carburetor appeared to function normally when manipulated by hand. The float was undamaged, and no debris was noticed in the bowl. A small amount of fuel was released from the carburetor during the disassembly. The two carburetor screens (coming into the carburetor and the interior screen) were found to be intact and free from debris.
- The magneto (dual magneto assembly) was attached to the engine and sustained impact. The magneto was removed and connect to a drill and all leads produced spark when checked.
- The ignition harnesses sustained impact damage.
- The alternator and starter were found intact and were attached to the engine.
- The engine fuel and oil lines were impact damaged.
- The oil sump appeared intact.
- The oil filter was found removed from the engine. It was cut open and the filter material was examined. No significant debris was found in the filter material.
- No fuel samples were obtained from the engine.
- Due to oil line leaks from the impact sequence, the oil level at the time of the accident could not be determined.
- The exhaust tubing sustained impact damage.
- The induction system sustained impact damage.
- There were no engine recording devices found in the wreckage.
- The 4 cylinders were borescoped and the pistons were photographed. No issues were noticed with the pistons. All the valves could not be photographed due to the engine not being able to be fully rotated.
- The engine sustained no fire damage.
- No signs of preimpact mechanical malfunction or failure were noted with the engine.

4.0 Propeller Examination (McCauley, 1C160DTM7557, Serial Number 725864)

- The two-blade metal propeller remained intact.

- The propeller showed chordwise scratching on blade 1. Blade 1 was bent rear, about 90 degrees.
- The spacer and attachment bolts were removed from the propeller.
- A spinner was found attached to the propeller and was crushed.
- The propeller sustained no fire damage.
- No signs of preimpact mechanical malfunction or failure were noted with the propeller.

5.0 Maintenance Records Review

- The historical FAA registration and airworthiness records were obtained from the FAA website.
- The pilot's flight log and training records were examined and documented. The pilot's training restrictions were examined and documented.
- The maintenance records were examined and documented.
- An examination of the airplane's maintenance records revealed no evidence of uncorrected mechanical discrepancies with the airframe, the propeller, or the engine.

Submitted by:

Michael J. Hodges
Investigator-In-Charge