



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Central Region

August 24, 2021

ON SCENE OBSERVATIONS

CEN21FA380

This document contains 20 embedded photos.

A. ACCIDENT

Location: Adrian, MO
Date: August 22, 2021
Aircraft: Piper J3C-65, Registration N70643, Serial #17661
NTSB IIC: Samantha Link

B. EXAMINATION PARTICIPANTS:

Samantha Link
Aviation Accident Investigator
National Transportation Safety Board
Denver, Colorado

Tom Davis
Airworthiness Inspector
Federal Aviation Administration
Kansas City, Missouri

AJ Wahlquist
Operations Inspector
Federal Aviation Administration
Kansas City, Missouri

C. SUMMARY

An on scene examination of the airframe and engine was conducted on August 24, 2021. No anomalies were noted during the examination.

D. DETAILS OF THE INVESTIGATION

1.0 Accident Site Overview

The airplane was found in a cornfield about 300 yards northwest of the private grass runway. The airplane was mostly whole and was positioned along a heading of about 135-degrees. The airplane came to rest nose down in the dirt. The aft fuselage and empennage extended upward into the air; it remained intact and mostly undamaged. Both wings were bent downward at the forward wing spar; and the aft wing attachment points were fracture separated. The wingtips exhibited aft crush damage and came to rest touching the dirt.

The engine and firewall were pushed aft and up toward the left. The left side of the engine was wedged between the wing spar and the left-wing leading edge. The lower cowlings were compressed into the bottom of the engine.

The propeller remained attached at the hub, and the crankshaft was bent just aft of the attachment flange. Both propeller blades were mostly straight. One blade exhibited some chordwise dirt marks and a slight aft bend about midspan. The other blade was mostly undamaged. The spinner was pushed aft into the hub and was cracked; it did not exhibit rotational damage.

The cabin area exhibited extensive aft crush damage throughout. The instrument panel was pushed aft into the front seat area. The front seat was pushed into the aft control stick, and it was unable to be manipulated. The fabric on the left side of the fuselage was torn away consistent with impact damage exposing a crushed fuselage frame and the fuel selector valve.

1.1 Accident Site Photo



Figure 1: Overview of Accident Site



Figure 2: Right Side of Airplane



Figure 3: Cabin Area

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Figure 4: Left Side of Airplane



Figure 5: Forward Fuselage



Figure 6: Overall Crush damage to Forward Fuselage and Engine



Figure 7: Propeller

Airframe Examination

- Flight control continuity was established throughout the airframe.
 - Due to cabin deformation, the aft seat control stick was wedged between the two cabin seats, and it was unable to be manipulated by hand.
 - The elevator and rudder control surfaces were manipulated by hand and corresponding motion was observed at the pilot seat.
 - The rudder control cables were not visible underneath the pilot seat, however, the control cables remained attached at the rudder pedals.
 - The right and left aileron control surfaces were manipulated by hand and corresponding motion was observed within the cabin and to the other aileron.
- The instruments remained within the instrument panel and were unremarkable.
- The fuel selector valve was not marked, and the handle was positioned up.
 - The valve was removed from the airframe. The valve was open between the header fuel tank and the engine.
 - The valve was closed to the left-wing fuel tank.
- Several “Mud Dauber” wasp nests were noted in the forward fuselage and engine compartment area.

1.2 Airframe Photos



Figure 8: Right Side Fuselage



Figure 9: Empennage

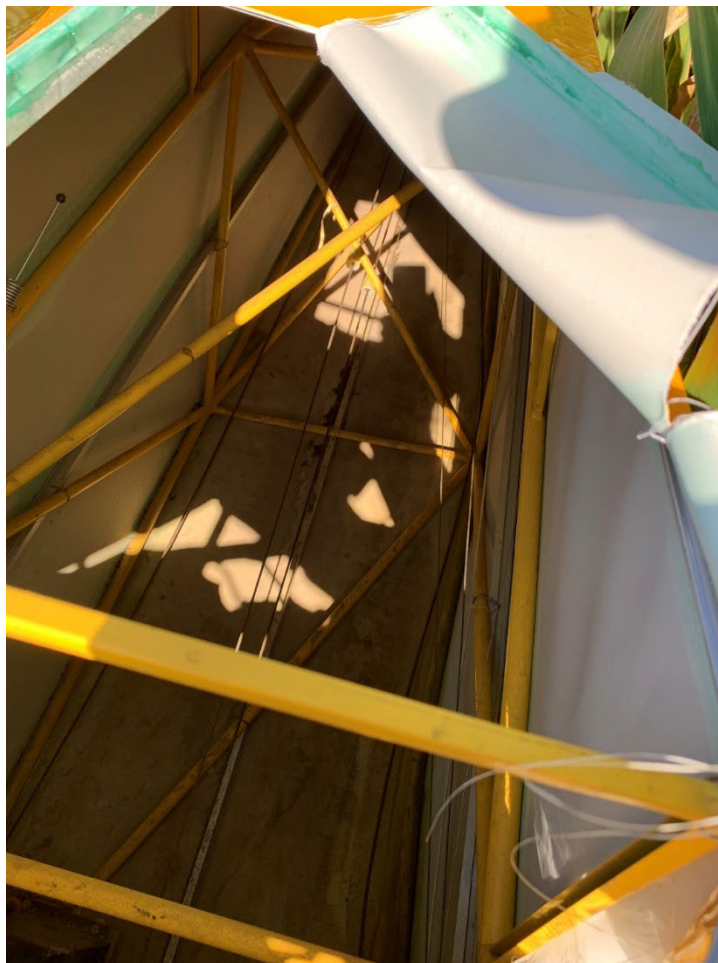


Figure 10: Elevator and Rudder Controls



Figure 11: Instrument Panel

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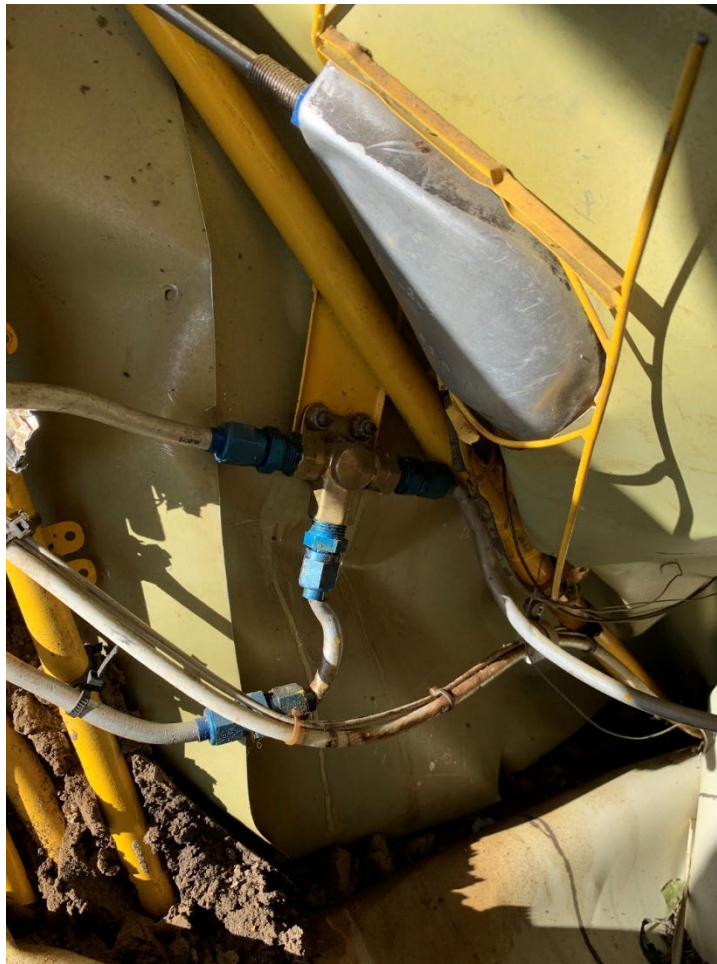


Figure 12: Fuel Selector Valve

2.0 Engine Examination

- There were no visual indications of catastrophic engine failure.
 - The forward left cylinder was covered in dirt.
- The crankshaft was bent and cracked just aft of the propeller attachment flange.
- The ignition harness remained connected; some areas of wear were noted.
- All ignition leads remained attached to the spark plugs and were removed; they were unremarkable.
- The spark plugs exhibited rust on the outside.
- All spark plugs, with the exception of the lower left side plugs, were removed from the engine.
 - The upper spark plugs exhibited normal operating signatures given the automotive gas.
 - The lower right side spark plugs were oily, consistent with how the engine came to rest.
 - The lower left side spark plugs were unable to be removed due to exhaust and airframe deformation.
- The rocker covers were removed, and the valves were consistent with normal operations.
 - The aft left cylinder rocker cover could not be removed due to this cylinder being compressed into the wing spar.
- All cylinders were borescoped and the piston heads exhibited normal operating signatures.
 - Rotation was observed on the pistons when the engine was rotated.

- The propeller rotated by hand 270 degrees. It could not rotate a full 360 degrees due to airframe deformation.
 - Thumb compression was established on the aft right cylinder and the valves moved accordingly.
 - The magneto impulse coupling was heard.
- The aft engine and accessory section were compressed into the firewall and were unable to be examined.
 - The magnetos and oil filter were inaccessible and unable to be examined.
- The carburetor was fracture separated from the engine and covered in dirt. The throttle and mixture controls remained attached to their respective levers.
 - The engine controls were disconnected, and the carburetor was disassembled.
 - When the throttle arm was moved, the butterfly valve moved accordingly, and fuel was observed exiting the accelerator pump.
 - The fuel was consistent with automotive gas
 - The remaining fuel was drained from the carburetor and debris was noted. However, it was unable to be determined if that was from inside of the carburetor or dirt from the outside.
 - The carburetor bowl was removed
 - Some debris was noted on the bottom of the bowl.
 - The floats were metal and unremarkable.
 - The needle valve manipulated easily.
 - The fuel inlet screen was removed and was clear of debris.
- The fuel strainer was removed from the airplane.
 - It was full of automotive fuel and debris was noted on the bottom of the bowl.
- The header fuel tank, which was located behind the firewall, was crushed.
 - It was borescoped and there was no fuel, or fuel residue, located inside of the tank. A crack was observed along the left side.
- The left-wing fuel tank was mostly intact. The fuel cap was removed, and fuel was observed within the fuel tank.
 - Fuel residue was noted leading from the fuel cap toward the leading edge of the wing. Consistent with how the airplane came to rest.
- The oil sump was breached, and oil leaked from the engine and was present below the engine.
- The exhaust system was mostly intact and exhibited some crush damage.

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2.1 Engine Photos

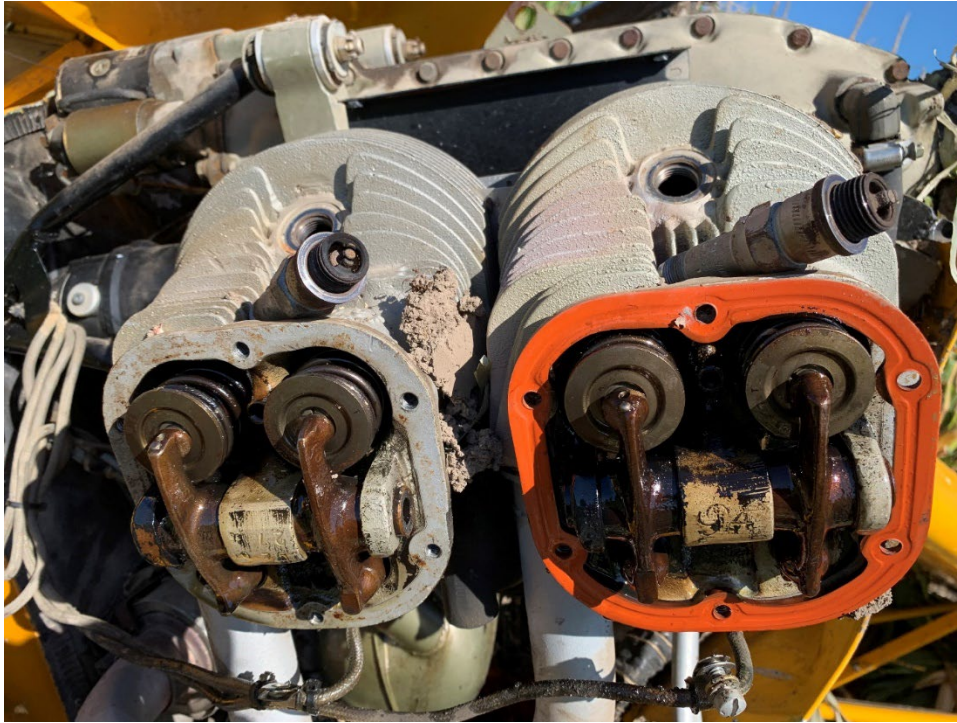


Figure 13: Right Side of Engine and Upper Spark Plugs



Figure 14: Left Side of Engine



Figure 15: Left Side Upper Spark Plugs



Figure 16: Underside of Engine



Figure 17: Carburetor



Figure 18: Carburetor Bowl



Figure 19: Carburetor Floats



Figure 20: Fuel Strainer

END. - Submitted by: Samantha Link