



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

May 25, 2019

ON SCENE OBSERVATIONS

WPR19FA154

This document contains 20 embedded photos.

A. ACCIDENT

Location: Grover, Utah
Date: May 24, 2019
Aircraft: Cirrus SR22, Registration N809SR, Serial #2129
NTSB IIC: Samantha Link

B. EXAMINATION PARTICIPANTS:

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C. SUMMARY

An on scene examination of the airframe and engine was conducted on May 25, 2019. No anomalies were noted during the on scene examination.

D. DETAILS OF THE INVESTIGATION

1.0 Accident Site Overview

The debris field was about 330 feet long with the approximate centerline orientated along 217 degrees magnetic. The airplane was heavily fragmented. It was scattered linearly, and perpendicular to, a cliffside.

The first identified piece of debris were fragments of the right wingtip. Extending from the wingtip fragments was a narrow dirt impression consistent with the leading edge of a wing which extended toward a large impact crater. Extending from the opposite side of the impact

crater was a second narrow dirt impression, consistent with a second wing. The next major pieces of debris, about 67 feet from the impact crater, was the right aileron then the lower left wing skin and the left wing tip. The left aileron and the horizontal stabilizer were next, followed by the vertical stabilizer and wing skin from both the left and right wings. The wing spar and the pilot seat came to rest about 211 feet from the initial impact crater; about 20 feet beyond that were a couple smaller craters then the engine, firewall, rudder, and elevator.

1.1 Accident Site Photos



Figure 1: Accident Site from the Ridge Above



Figure 2: Debris Path from First Piece of Debris

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Figure 3: Initial Impact Crater

2.0 Airframe Examination

- The right wing was fracture separated into several pieces and scattered throughout the debris field
 - The fractures were along its span as well as its upper and lower wing skins.
 - The right aileron was whole but exhibited crush damage throughout
 - The mass balance was present
 - Safety wire in the aileron bolt was present
 - The right flap was mostly whole and exhibited crush damage throughout.
 - Chordwise bends were noted in three places throughout its span
- The aft fuselage was fractured into several pieces and scattered throughout the debris field.
- The empennage was fracture separated and scattered throughout the debris field.
 - The vertical stabilizer itself was mostly whole, but exhibited crush damage
 - The rudder was found separated from the vertical stabilizer
 - It was mostly whole, but exhibited impact related damage

- The horizontal stabilizer was mostly whole
 - The right side was fracture separated about midspan
 - The elevators exhibited heavy impact related damage
- The Cabin:
 - The instrument panel was heavily fragmented and scattered in the vicinity of the engine.
 - The pilot seat remained mostly secured to the wing spar and exhibited heavy impact related damage
 - The seatbelt airbag was deployed
 - The passenger seat exhibited heavy impact related damage
 - The seatbelt airbag was deployed
 - The aft seat was separated from the airframe and exhibited heavy impact damage.
 - The hobbs meter read 2,671.8
 - The rudder pedals and control columns were fracture separated from the airframe
 - The fuel selector knob was found fracture separated from the fuel valve
 - Portable oxygen was observed within the debris field
- The roof of the airplane came to rest near the end of the wreckage debris path and exhibited heavy thermal damage.
 - The parachute exhibited thermal damage;
 - The parachute straps were still positioned consistent with being in the stowed position.
 - The parachute rocket was found breached and not launched
 - The parachute handle was still secured to the roof of the airplane
 - It exhibited thermal and impact related damage
 - The handle was found in its handle holder
 - The pin was not present
- The engine cowling was found fracture separated.
 - Fragments of the engine cowling were found both at the beginning and the end of the debris field.
 - The top forward portion of the engine cowling was fractured diagonally to the right.
- The left wing was fracture separated into several pieces and scattered throughout the debris field
 - The fractures were along its span as well as upper and lower wing skins.
 - The left aileron was fracture separated into two pieces
 - The left flap was mostly whole and exhibited crush damage throughout.

- Chordwise bends were noted in three places throughout its span
- The TKS system was found fracture separated and scattered throughout the debris field.
- Control continuity was established throughout the airframe
 - The elevator and rudder controls were continuous
 - The aileron control cable was fracture separated at the control panel and at the aileron actuation pulley
 - The fractures were consistent with overload.

2.1 Airframe Photos



Figure 4: Engine, Firewall, and Rudder

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Figure 5: Upper Cowling



Figure 6: The Wing Spar



Figure 7: Inboard Left Wing



Figure 8: Left Aileron



Figure 9: Horizontal Stabilizer



Figure 10: Vertical Stabilizer



Figure 11: Parachute Handle

3.0 Engine Examination

- The engine was fracture separated from the airframe and came to rest about 211 feet away from the initial impact crater.
- Several engine components were found fracture separated from the engine and found throughout the debris field.
- The crankcase exhibited impact related damage, but there were no signs of catastrophic engine failure.
 - A small hole was present, but was consistent with impact related damage
- The crankshaft was observed bent just aft of the propeller flange
 - The crankshaft gear was observed and displayed normal operating wear signatures
 - The engine was unable to be rotated consistent with impact damage and how the engine was resting on site.
- All six cylinders remained attached to the cylinder bays
 - The right side cylinders exhibited more damage than the left side cylinders.
 - All of the right side cylinders and the #6 cylinder rocker arms had broken free and were scattered throughout the debris field.
 - Some of the rocker arms were located and exhibited normal operating wear signatures
 - The cylinders were borescoped
 - The cylinder bores, piston faces, and valve heads displayed normal operating wear signatures.

- The fuel pump remained attached to the engine and exhibited impact related damage
 - The pump was removed from the engine and the drive coupling was intact
 - The fuel pump drive shaft was rotated, and residual fuel pumped through the line
 - The fuel smelled consistent with 100LL
- The throttle and metering assembly were found fracture separated from its installation point and exhibited impact related damage.
 - The throttle arm remained secure to the shaft
 - The throttle valve moved, but was restricted due to impact damage
 - The fuel metering portion of the assembly was disassembled; and the internal components exhibited normal operating wear signatures.
 - The metering plug orifice was clear of debris
- The fuel manifold valve remained partially attached to its installation point and exhibited impact related damage.
 - The manifold valve was disassembled, and the internal components displayed normal operating signatures
- The magnetos were found fracture separated from the engine and exhibited significant impact related damage.
 - Both capacitors were fracture separated and were not located
 - One magneto had a large hole in the side that allowed access to view the internal components.
 - The internal components exhibited normal operating wear signatures and rotated freely
 - The magneto points exhibited impact related damage
 - The other magneto was disassembled, and the internal components exhibited normal operating wear signatures
 - The magneto points exhibited impact related damage
- The ignition harness exhibited heavy impact related damage
- The top spark plugs were removed and exhibited normal operating wear signatures
- The lower spark plugs were examined via the boroscope and exhibited normal operating wear signatures.
 - It was noted that one of the bottom spark plugs was fracture separated and only the ground electrodes remained within the cylinder.
- The oil pump was found attached to the engine and exhibited some impact related damage
- The oil filter was found fracture separated from the engine and exhibited heavy impact related damage

- The filter housing was cut open and the visible pleats did not exhibit metallic material.
 - The filter could not be completely removed from the housing due heavy impact damage.
- The oil cooler was found fracture separated from the engine and displayed impact related damage signatures.
- The starter was found fracture separated from the starter adapter and exhibited impact related damage signatures.
- The starter adapter was found attached to the engine and exhibited impact related damage
- The primary alternator was fracture separated from the engine and was not located
- The backup alternator was found separated from the engine and exhibited impact related damage signatures

3.1 Engine Photos



Figure 12: Top of Engine



Figure 13: Right Side of Engine



Figure 14: Left Side of Engine



Figure 15: Oil Filter

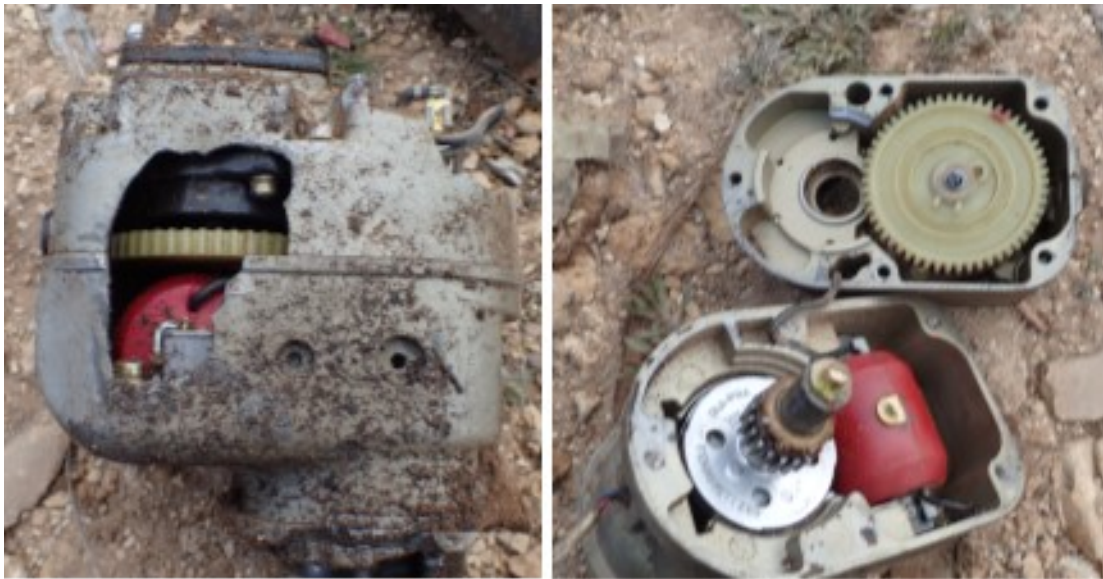


Figure 16: Magnetos



Figure 17: Fuel Distributor



Figure 18: Fuel Servo

4.0 Propeller Examination

- The propeller assembly remained attached to the engine and the three blades remained attached to the hub
 - One blade was fracture separated at the blade shank
 - The blade was unable to be located.
 - The second blade was bent forward at the blade root; it exhibited both chordwise and longwise scratching
 - A leading edge gouge was observed about 1/3 inboard from the blade tip
 - The third blade was bent aft about midspan and exhibited chordwise scratching
- The propeller governor was found separated from the engine and exhibited impact related damage
 - Oil was still present within the governor and it appeared normal looking oil that was black in color.
- The spinner was crushed aft past the propeller hub.

4.1 Propeller Photos

- Propeller Photos are located in the “Airframe and Engine Examination Observations” document.

END.

Submitted by: Samantha Link