



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

April 4, 2018

ACCIDENT SITE / AIRFRAME / ENGINE EXAMINATION SUMMARY

WPR18FA116

This document contains 1 embedded photos.

A. ACCIDENT

Location: Santa Paula, California
Date: March 31, 2018
Aircraft: Ragle RV6A, N820TL
NTSB Investigator-in-Charge: Joshua Cawthra

B. DETAILS OF THE INVESTIGATION

1.0 Accident Site

GPS Coordinates: N34.345675, W-119.047808
Elevation: 298' msl

Examination of the accident site revealed that the airplane impacted trees and terrain about 0.7 miles east of SZP. The initial point of impact was separated tree limbs, about 20 feet above the ground and an adjacent brick wall, about 8 feet in height. On one side of the brick wall, the left main landing gear assembly was located and on the other side of the brick wall (opposite that of where the wreckage was), the left main landing gear wheel pant, and inboard forward portion of the left wing, including the fuel tank was found. Fire damage was noted to the surrounding structure adjacent to the wall where the inboard portion of the left wing was found. Severed tree limbs, plexi glass, canopy structure, and various debris was located throughout the debris path, which was about 30 feet in length and oriented on a heading of about 160 degrees magnetic. The main wreckage came to rest upright on a heading of about 043 degrees magnetic.



Photo 1: Overview of the accident site in relationship to the airport.

2.0 Airframe Examination

Examination of the fuselage revealed that the center portion of the fuselage, from the bulkhead aft of the seats to the instrument panel was mostly consumed by fire. The fuselage structure from the bulk head aft of the seats to the forward part of the vertical stabilizer, was buckled and compressed inward with an almost circular impression. The empennage was slightly displaced left. The vertical stabilizer remained attached via its mounts and was buckled throughout. The rudder remained attached via its mounts. The bottom 7 inches of the rudder was displaced left and crushed upward. The left horizontal remained partially attached by the rear spar attach point. The outboard 24 inches was buckled and bent slightly upward. The right elevator remained attached via its mounts. The outboard 29 inches was buckled and bent throughout. The trim tab remained attached to its mounts. The trim tab actuator screw was extended about ½ inch from the forward side of the unit. The right horizontal stabilizer remained attached via both its mounts. The right elevator was bent and buckled throughout, and the trailing edge was bent upward.

Cockpit Documentation

Magnetos: Both
DG: 050 degrees
Manifold Pressure: 10 inches, fully deflected to the left
Tachometer: 0 / deflected left
EGT: 10 / deflected left
CHT: 100, deflected left
Oil Pressure: Fully deflected left
Fuel Pressure: Fully deflected left
Alt Field: Off
Radios: On
Boost Pump: Off
Strobe Lights: Off
Nav Lights: On
Cabin Lights: Off
Radio: Destroyed
Transponder: Destroyed
Landing Light: Off
Hobbs: Destroyed
Dynon EFIS D10A – Intact
Throttle: Full forward
Mixture: Full forward
Propeller; about ¼ inch from full forward

The fuel selector handle was near the left fuel tank position. The internal plastic cone was consumed by fire, which made the fuel selector valve handle position unreliable.

The canopy structure was fragmented and fire damaged. The canopy plexi glass was fragmented into multiple pieces. No evidence of a bird strike was observed on the canopy structure.

The left wing was mostly separated from the fuselage. The forward spar attach point remained attached to the fuselage and was cut during wreckage recovery. The wing was bent and buckled throughout. The wing at the flap/aileron junction was "bowed" with both the inboard and outboard portion of the wings bent downward. The flap remained attached via its mounts. The aileron remained attached via its mounts. The outboard half of the aileron was crushed inward. The left main landing gear was separated from the wing structure.

The right wing was mostly consumed by fire. The right main spar remained attached to the fuselage, however, most of the wing structure aft of the spar was separated. The aileron remained attached via all its mounts and exhibited fire damage. The flap remained attached to the wing structure.

The airframe fuel pump was mostly consumed by fire.

Elevator control continuity was established from the elevators forward to the bell crank located just aft of the cabin seating area. The rod end was separated from the between the bell crank and torque tube. Elevator control continuity continued from the bellcrank forward to the control column. Rudder control continuity was established from the rudder to the rudder pedals, however, the left rudder cable was separated just aft of the rudder pedals and exhibited splayed signatures, consistent with overload. Aileron control continuity was established from the left aileron through the bellcrank to the inboard portion of the wing where the torque tube was separated (consistent with impact damage and continued to the left control stick. The right aileron was continuous through the bellcrank to about mid span of the flap where the torque tube was separated, consistent with impact. The torque tube continued to the right control stick. The interconnect for the left and right control sticks was impact and fire damaged. Both flap rod end bearings were separated. The flap actuator measured about 2.25 inches in length, consistent with about one-half flaps, or approximately 20°.

3.0 Engine Examination

Examination of the engine revealed that it remained attached to the forward portion of the airframe via its mounts. All of the engine accessories remained attached to the engine. The upper spark plugs were removed. All four cylinders were examined internally using a lighted borescope and were unremarkable. The crankshaft was rotated by hand using the propeller. Rotational continuity was established throughout the engine and valve train. Thumb compression was obtained on all 4 cylinders. The oil suction screen was free of debris. The oil filter was consumed by fire.

The left and right magnetos exhibited fire damage which precluded functional testing.

All ignition leads were secure to their respective spark plugs. The upper spark plugs exhibited color and wear consistent with normal operation. No evidence of any mechanical damage was observed.

The engine driven fuel pump was fire damaged and internal components were mostly consumed by fire. The fuel lines were secure at each of their respective fittings.

The carburetor was thermally discolored and damaged. The throttle and mixture levers were connected via their respective control arms and moved freely from stop to stop. The fuel finger screen was free of debris. The internal floats were consumed by fire. The venturi was partially melted. The fuel inlet line was secure at the carburetor fitting.

The fiberglass airbox was crushed and exhibited fire damage. No evidence of any preimpact debris was observed.

The propeller governor was secure at its mounting pad. The control rod remained attached to the control arm. The propeller governor was removed and the drive shaft rotated by hand freely. The gasket screen was free of any visible debris.

The accessory case was removed and the internal gears were intact and undamaged. The crankshaft gear bolt and dowel remained undamaged and secure. The oil pump was free to rotate by hand.

Examination of the propeller revealed that it remained attached to the engine crankshaft. One propeller blade was slightly bent forward about $\frac{3}{4}$ span from the blade root. The propeller tip was curled 180-degrees aft and exhibited leading edge gouges and scoring. The opposing propeller blade exhibited bending opposite direction of the rotation about mid span outward and exhibited leading edge gouging and chordwise striations on the front side of the blade near the tip. The propeller blade exhibited thermal damage and discoloration.

Submitted by: Joshua Cawthra