



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety

Western Pacific Region

April 8, 2020

AIRPLANE & ENGINE EXAMINATION

WPR19LA160

This document contains 5 embedded photos.

(9 Pages)

A. ACCIDENT

Location: Davis, California

Date: June 6, 2019

Aircraft: Cessna 150

NTSB IIC: Stephen Stein

B. EXAMINATION PARTICIPANTS

Stephen Stein
Air Safety Investigator (IIC)
National Transportation Safety Board
Federal Way, Washington

Joseph Mitchell
Aviation Safety Inspector
Federal Aviation Administration
Sacramento, California

Kurt Gibson
Air Safety Investigator
Continental Aerospace Technologies
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C. DETAILS OF THE INVESTIGATION

HISTORY OF FLIGHT

On June 6, 2019, about 1930 Pacific daylight time, a Cessna 150F, N6617F, was substantially damaged during a forced landing near Davis, California. The private pilot and pilot-rated passenger were not injured. The airplane was registered to a private individual and operated by the pilot as a personal flight, conducted under the provisions of Title 14 *Code of Federal Regulations* Part 91. Visual meteorological conditions prevailed and a flight plan was not filed, for the cross-country flight that departed Sacramento, California at 1915 and was destined for Yolo County Airport (DWA), Davis, California.

The pilot stated that he borrowed the airplane from a friend for a flight with his son, a student pilot, around the Sacramento area. During the preflight inspection, the pilot's son observed significant levels of water while sumping the fuel tanks and gascolator. He continued to drain the fuel tanks until he no longer observed any water contamination. They subsequently taxied the airplane to a fuel farm at DWA where they filled both fuel tanks with 100 low lead aviation grade gasoline, totaling 26 gallons. The pilot's son sumped the fuel tanks again and observed more water. After 5 subsequent rounds sumping the tanks, they began to observe water-free fuel samples. The pilot rocked the wings before he re-sumped the fuel tanks once more, but did not observe any further water contamination.

They departed DWA and performed touch-and-go landings at multiple airports. While en-route to an intermediate airport at 1,500 ft and south of Davis, California, the pilot retarded the throttle so his son could practice the engine failure emergency procedure. As the airplane reached 500 ft, the pilot asked his son to advance the throttle to full power, and he complied. The engine maintained full rpm without hesitation for about 40 seconds before the engine rpm dropped to an engine idle position, about 1,000 rpm. The pilot took control of the airplane and attempted to restart the engine while he established the airplane's published best glide speed. He then made several unsuccessful attempts to restart the engine, which was no longer producing any power. The pilot turned the airplane into the wind and executed a forced landing in a field. However, the main landing gear impacted the dirt during touchdown and the airplane nosed over and came to rest inverted.

Postaccident examination of the airplane by the Federal Aviation Administration revealed damage to the engine firewall, engine mount, and rudder.

PERSONNEL INFORMATION

The pilot, age 55, held a private pilot certificate with a rating for single-engine land. The pilot's most recent basic med certificate was issued on June 7, 2019, which included a medical restriction, "vision corrective glasses." The pilot had logged about 10 total flight hours in the airplane at the time of the accident. In the previous 90 days, he accrued 4 total flight hours in the accident airplane make and model. He had amassed a total of 2,307 flight hours in all aircraft at the time of the accident, all of which was in airplanes. The pilot's most recent flight review was completed on October 5, 2017.

AIRCRAFT INFORMATION

Federal Aviation Administration records showed that the airplane was manufactured in 1966 and registered to the owner on December 27, 2012. The airplane was powered by a Continental O-200-A, air cooled, 100 horsepower reciprocating engine. Maintenance records showed that the airplane's most recent annual inspection was completed on March 1, 2019 at a total time of 4,032.5 flight hours. The engine's most recent overhaul was completed on February 17, 2019, 15.1 flight hours prior to the accident. An excerpt from the most recent annual inspection showed that the fuel tank top skin panel hardware was replaced, along with the right fuel tank gasket and lanyards.

METEOROLOGICAL INFORMATION

The 1920 recorded weather observation at University Airport, Davis, California, located about 4 nm west of the accident site included wind from 190° at 04 knots, visibility 10 statute miles, clear sky, temperature 25° C, dew point 16° C, and an altimeter setting of 29.77 inches of mercury.

ADDITIONAL INFORMATION

An airframe and engine examination was performed in the airplane owner's hangar on July 26, 2019 by the engine manufacturer with oversight from the National Transportation Safety Board Investigator-in-Charge.

Airframe Examination

Fuel System

The gravity fed fuel system directed fuel to the engine through a single point fuel shut-off valve, which had two positions; ON and OFF. Examination of the fuel valve showed that the unit was not obstructed. The gascolator fuel bowl was removed and showed a white powdery residue consistent with water contamination along the rim of the bowl. The bowl was mostly void of fuel with the exception of a trace amount of liquid at the bottom of the bowl, which tested positive for water contamination using SARGEL water finding paste (*photograph 1*). The upper gascolator mount displayed white powdery residue (*photograph 2*). The fuel tanks were not breached and the fuel lines were not compromised.

Both wings had been removed prior to the examination and had been stored in a hangar until the date of the examination. The residual fuel in each wing was drained; the fuel from the left wing was consistent with 100 low lead aviation grade gasoline and did not show evidence of water contamination. A few ounces of fuel obtained from the right wing was comprised of water, which was confirmed using SARGEL water finding paste (*photograph 3*). (*photograph 4*). The left wing fuel tank flange was also rusted and rotated with the fuel tank cap, but the fuel tank gasket appeared to have been recently replaced.

Engine Examination

The engine was mostly intact with the exception of the airbox, which was partially damaged from the impact. Throttle, mixture and carburetor heat control continuity was confirmed from the cockpit to the carburetor and airbox, respectfully. The carburetor heat valve did not move, but the cable moved normally when disconnected from the airbox. All eight spark plugs exhibited normal wear when compared to the Champion Check-A-Plug chart. After the spark plugs and rocker box covers were removed the crankshaft was rotated by hand at the propeller. Each of the 8 ignition leads displayed spark in the correct firing order. Thumb compression and suction was confirmed for each of the engine's 4 cylinders. Valvetrain continuity was confirmed as the propeller was rotated and the valves displayed normal movement.

The carburetor was manufactured by Marvel Schebler and was a model MSA-3SPA. The fuel drain plug was caked in white powdery residue as was the bottom of the fuel bowl cavity (*photograph 5*). Both floats operated normally when tested. The carburetor fuel screen was free of debris.

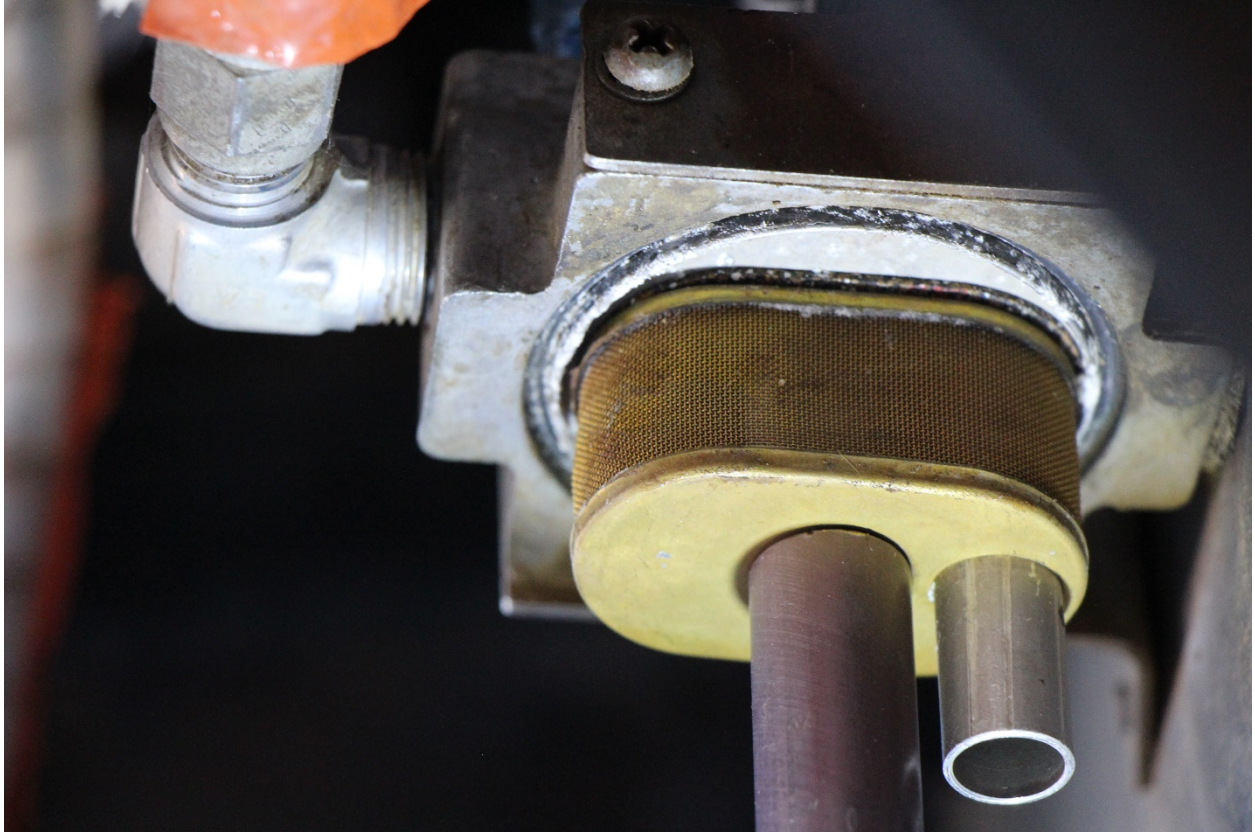
Magneto timing was tested using a mag timing light, which showed that the R and L magnetos fired at 22° before top dead center.

The oil filter displayed some metallic particles and carbon debris.

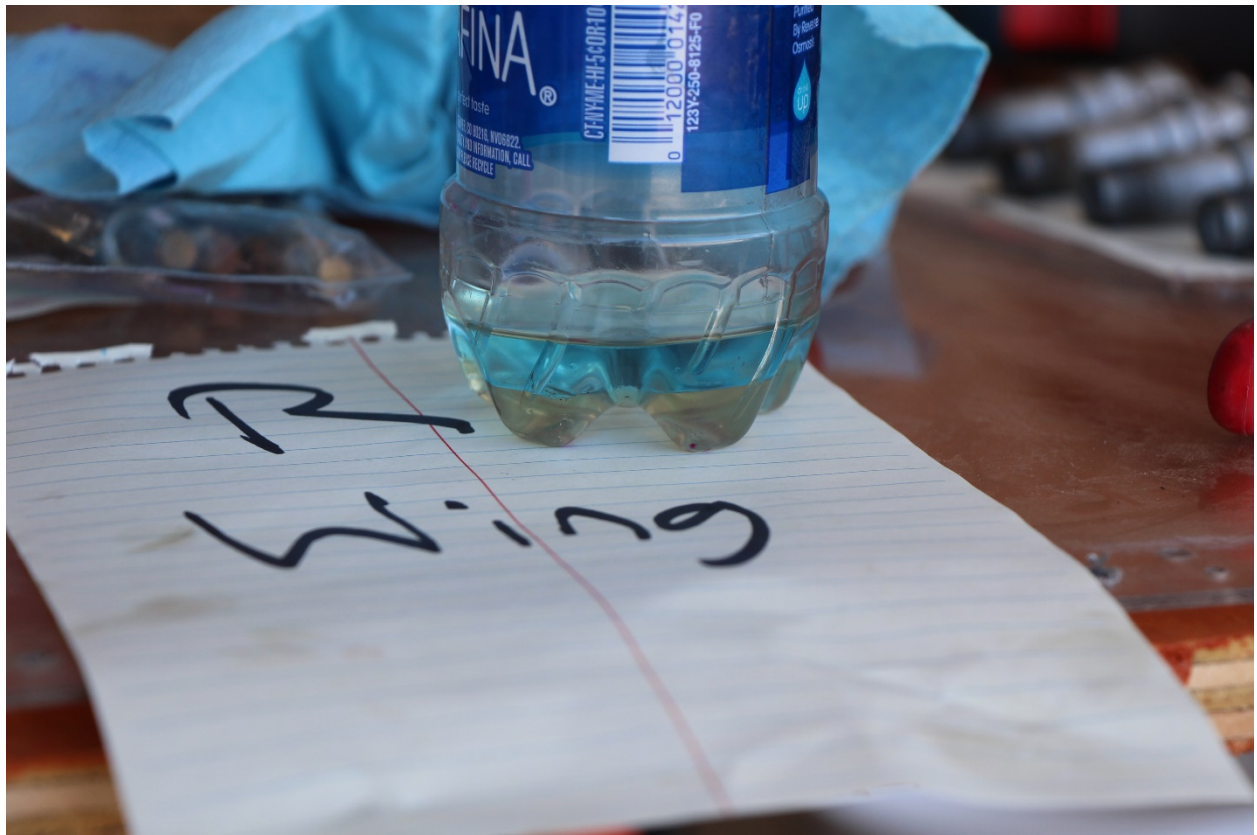
The R side exhaust manifold was intact and dirt particles were found inside the exhaust cavity. A 3 inch long hairline crack was observed adjacent to one of the gas welds.



Photograph 1: Gascolator Bowl and SARGEL Water Finding Paste



Photograph 2: Gascolator Upper Mount



Photograph 3: Right Wing Fuel Sample



Photograph 4: Right Fuel Tank Cap and Flange



Photograph 5: Carburetor Fuel Drain Plug