



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety Alaska Region

Airframe and Engine Examination Summary

October 1, 2020

Sutton Air Salvage, Palmer, Alaska

A. Accident

NTSB Number: ANC20LA093

Location: Homer, AK

Date: September 13, 2020

Aircraft: Piper PA-22-135, N8875C

Engine: Lycoming O-290D2, S/N 5897-21, SMOH 268 hours

B. Background

On September 13, 2020, about 1632 Alaska daylight time, a Piper PA-22 airplane, N8875C, was substantially damaged when it was involved in an accident near Homer, Alaska. The private pilot sustained minor injuries. The airplane was operated as a Title 14 Code of Federal Regulations part 91 personal flight.

The pilot reported that he was conducting a local flight from the Homer Airport (HOM) after the airplane had not flown for a month. While performing the preflight inspection, the pilot sumped each of the 4 low point drains and recovered about 1/2 inch of water from the left wing tank drain. The other samples were clear. The wing tank fuel levels were about 3/4 full. The pilot stated that he taxied a long distance to runway 22 with the fuel selector on the right tank, and then switched to the left tank for takeoff. After takeoff and during the initial climb from runway 22, the engine experienced a total loss of power and the propeller continued to windmill. The pilot performed a forced landing to a beach on Kachemak Bay.

During the landing, the left wing tip struck the surface, resulting in a loss of control and substantial damage to each wing and fuselage.

C. Participants in Detailed Examination

NTSB Investigator-in-Charge (IIC)	Noreen Price
Joseph Beubaca	Mechanic, Sutton Air Salvage

D. Airframe Examination

A review of the airframe logbooks revealed that the last inspection was an annual inspection completed by Alaskan Motive on July 21, 2020, at a total airframe time of 2,943.1 hours and a tach time of 328.1. The tachometer indicated 329.2 hours at the time of the examination. FAA airworthiness records included an STC SA01944CH for the use of automotive fuel.

According to the wreckage recovery crew, 11 gallons of fuel were drained from the airplane wing tanks before they were removed for transport from the accident scene to the salvage facility. The horizontal stabilizer and rudder were removed as well. The examination was conducted outside. The wings, airframe and engine were examined.

The forward half of the fuselage exhibited buckling in the top and bottom frame structure. The cockpit overhead exhibited extensive downward crush on the right side and some bucking forward of the rudders. The engine firewall was significantly buckled rearward in the lower half. The nosewheel, strut and airframe attachment areas were deformed rearward. See figure 1.



Figure 1. The airplane with the wings removed.

The right wing front spar exhibited an upward bend about 4 ft from the tip. The ailerons and flaps were attached, and intact and control continuity was established to the control rods and cut cable at the wing root. The left wing outer 3 ft exhibited significant crushing inward and aft. The left flaps and aileron were attached.

The right wing fuel tank cap was installed and secure. A placard was present that stated the airplane is approved for the use of automotive gasoline. The cap was removed. A thick black gasket with evident cracking and crumbling was installed around the filler neck and had a 1 inch piece missing. The filler neck exhibited orange and brown surface corrosion over 25%. The fuel tank was intact and dry. See figure 2.

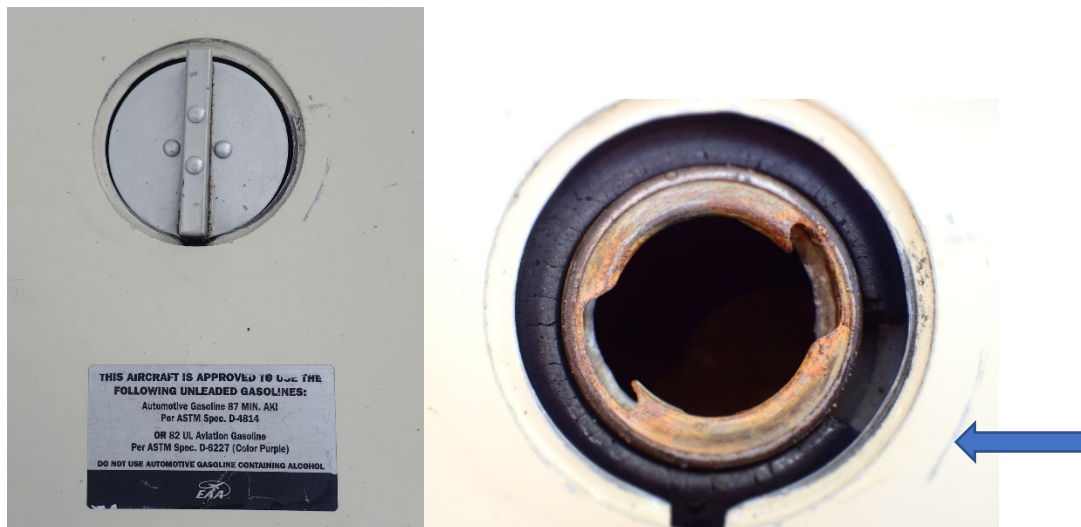


Figure 2. Right wing fuel tank cap (left) and filler neck (right) with incomplete gasket (blue).

The wing panel above the left wing fuel tank was previously removed by the recovery crew. The left wing fuel tank was intact and empty. The cap was installed and secure and was a different model type than the right wing fuel tank. A thin black gasket with minor wear and orange corrosion deposits (from filler neck) was in place in the cap. The filler neck exhibited about 40% corrosion on the surface with significant crumbling oxidation on the exterior. The fuel tank exhibited a 3 inch area of separation at the filler neck base. See figure 3.

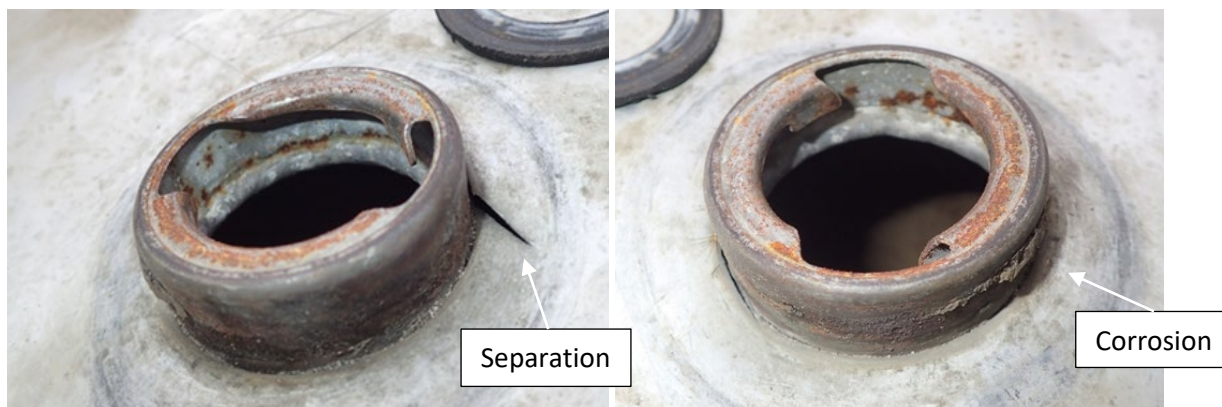


Figure 3. Left wing fuel tank filler neck separation (left) and filler neck (right) corrosion.

The fuel selector valve was in the off position. The selector lever moved smoothly through the left, right and off positions and the detents were evident.

The fuel line from the fuel selector valve to the gascolator was removed. No fuel was evident, and the connector was dry. The gascolator was in an area of significant impact deformation. The gascolator bowl

was displaced from the cap and no liquid was present. The fuel filter element was dry and clear of debris. The fuel line from the gascolator to the carburetor was disconnected and about 3 tbsp of fuel ran out. The fuel tested negative for the presence of water. The fuel sample was clear in color and had the odor of auto fuel.

E. Engine Examination

A review of engine logbooks revealed that the last overhaul of the engine was August 30, 2008, and the last annual inspection was July 21, 2020.

The engine was attached at the airframe mounts and all fuel, hoses, electric lines, and accessories were attached and secure. Some deformation and rearward crushing was present on the bottom, resulting in damage to the oil cooler, carburetor and airbox and firewall. The engine was leaning to the left, attached to the airframe mounts on deformed airframe structural tubes. The case and cylinders were intact. Sand was present throughout the engine compartment. See figure 5.



Figure 4. Lycoming O-290 engine during the examination.

Control continuity from the cockpit engine controls to the carburetor was complete, although full movement was hampered by pinched cables in the impact damaged area.

The propeller rotated freely by hand. Crankshaft and camshaft continuity were confirmed. Thumb

compression was obtained, and rocker movement was verified during rotation of the crankshaft.

The ignition system was functionally tested with no evidence of pre-accident malfunction. Both the left and right magnetos were secure. Spark was evident at each of the #2 and #4 upper and #3 and #1 lower leads when the propeller was rotated. The audible snap of the single impulse coupling was evident.

The upper and lower spark plugs (Champion REM40EE) were removed and examined. All sparkplugs exhibited normal wear signatures, and #s 1, 3 and 4 top and 3 bottom had moderate amount of black carbon deposits. Numbers 3 top and 3 and 4 bottom had oil present.

The piston heads and cylinder walls indicated normal wear signatures.

The oil level was 4 quarts; however, the engine was not level.

The carburetor (Marvel Schebler MA3SPA P/N 10-3565, S/N 3970955) was attached to the oil sump and exhibited fractures (dull dimpled fracture surfaces) at the throttle valve housing. The airbox and carb heat box were attached. The carburetor was removed and disassembled. The fuel inlet finger filter was wet and clear of debris. The accelerator pump functioned when the throttle lever was cycled. After cycling the pump 3 times, about 2 tablespoons of liquid was present in the pump reservoir. The sample tested positive for water when a Sar-Gel paste test was conducted. The liquid was a mix of auto fuel and brownish water. A small amount of sand debris was present in the carburetor bowl, which was wet and smelled of auto gas. The throttle and mixture levers were attached and safety wired appropriately, although slightly deformed due to impact damage. See figure 5.



Figure 5. Carburetor

The 2 bladed Sensenich propeller (model 74DM-6-058) was attached to the crank shaft. The spinner exhibited minor twist buckling. One blade was secure and straight and the other indicated a rearward bend and leading edge impact damage at the outer 18 inches with some chordwise scratching. See figure 6.



Figure 6. Engine cowling and propeller.

F. Summary

The examination uncovered anomalies in the airframe fuel system, specifically the presence of corroded fuel tank filler necks, degraded gasket on the right fuel tank filler, and fractured fuel tank at the right fuel filler neck. The gascolator had no fuel present, likely due to an impact displacement. Fuel was present in the fuel line from the gascolator to the carburetor; however, a fuel/water mix was present in the carburetor. Engine valve train and drive shaft continuity was established. No anomalies in the engine cylinders, induction system, and ignition system were observed.