NATIONAL TRANSPORTATION SAFETY BOARD
Office of Aviation Safety
Washington, DC 20594

SUMMARY OF ENGINE EXAMINATION

CEN20LA365

A. ACCIDENT

Location: Peyton, Colorado
Date: August 26/2020
Time: 11:37 am MDT
Aircraft: Cessna T210N (S/N 21063032) N64EM

B. PARTICIPANTS

David Bowling
Senior Air Safety Investigator
National Transportation Safety Board

Lorenzo Robeldo
Air Safety Inspector
Federal Aviation Administration
Denver, Colorado

David Beard
A&P Mechanic
Beegles Aircraft Service, LLC
Greeley, Colorado

C. ACCIDENT SUMMARY

On August 26, 2020, about 1137 mountain daylight time, a Cessna T210N airplane, N64EM, was destroyed when it was involved in an accident near Peyton, Colorado. The private pilot sustained fatal injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to initial information, between about 0830 and 0930, the airplane was flown in the airport traffic pattern at the Meadow Lake Airport (FLY), near Colorado Springs, Colorado. About 1011, the pilot flew the airplane about 20 minutes from FLY to the City of Colorado Springs Municipal Airport (COS), near Colorado Springs, Colorado, for service to the airplane's oxygen system. About 1125, the airplane departed COS on a return flight to FLY.

During the return flight, a flight instructor who was providing instruction in a slower airplane in the pattern at FLY stated that he remembered the accident airplane getting in between the airplane he was in and another slower airplane that was in trail for a landing on runway 33. The instructor felt that there was not much separation between the airplanes. The student and instructor turned the airplane from the base leg onto final and thought the accident airplane extended its downwind to make some room between the slower airplanes. After the student and instructor landed their airplane, they heard that the accident airplane had crashed south of the runway. The instructor turned around and saw plumes of black smoke and the student called 911.

The pilot in the slower trailing airplane stated that the accident airplane entered on the downwind between his airplane and the instructor's and student pilot's airplane. He saw that the accident airplane flew an extended downwind leg and overshot the runway while turning final. A crosswind was present relative to runway 33. The accident airplane increased its bank during that turn to final and pitched up. The accident airplane then impacted terrain, a "puff" of white smoke was observed, then a "fire ball", and black smoke. The airplane nosed over following the impact. The pilot said that the accident pilot made all "proper" radio calls without any mention of malfunctions and did not declare an emergency.

A witness near the accident site said that he saw the airplane's wings "wiggle" and thought that the airplane was going to crash. The airplane then nosed down and impacted terrain. The airplane was about 30 to 50 ft up in the air when it nosed down. The airplane dropped "straight" in. There was no fire or smoke from the airplane when it was in the air. The witness did not hear any engine "sounds". The nose landing gear separated on impact, bounced, and it came to rest by a fence line. The airplane slid on the ground from its initial impact point to its resting point and subsequently caught on fire.

The 46-year-old pilot reported that he had accumulated 207 hours of total flight time and 0 hours of flight in last six months before his last Federal Aviation Administration (FAA) examination for a third class medical certificate dated December 2, 2019. The pilot was given a notice of disapproval after his initial attempt at a private pilot examination. According to a flight instructor who subsequently endorsed the accident pilot's private pilot retest, the accident pilot's areas of deficiency were the soft field takeoff and the short field landing. The instructor gave the accident pilot four additional instructional flights totaling 8.1 hours of flight time. The instructor did not recall the specifics of the instruction he gave the pilot. However, the pilot satisfactorily passed the retesting for his private pilot certificate on October 21, 2016.

According to initial information from a mechanic who performed maintenance on the accident airplane, the engine exhibited low cylinder compression readings during an annual inspection and cylinders were replaced. The mechanic subsequently flew the airplane with the pilot to seat the rings.

A fuel service receipt shows the accident airplane was fueled on August 26, 2020, about 0945, with 53.34 gallons of 100 low lead aviation gasoline. The airplane was equipped with two 45-gallon fuel tanks, which had a total capacity of 90 gallons of which 89 gallons was usable.

The airplane impacted terrain about a mile southeast of runway 33 at FLY. FAA inspectors examined and documented the wreckage. The left wing, left elevator, and sections of the fuselage were melted, deformed, and discolored consistent with ground fire. The outboard section of the right wing did not exhibit the same extent of thermal deformation and discoloration as the left wing. The fuel tank selector was found selecting the right tank. The propeller hub remained attached to the engine. The propeller blade that remained attached to the hub exhibited melting, deformation, and discoloration. Two propeller blades separated from the propeller hub and outboard sections of those blades exhibited chordwise abrasion. The flap jack screw extension was consistent with retracted flaps.

The airplane and engine were recovered and have been retained for further examination.

The El Paso County Coroner was asked to conduct an autopsy on the pilot and to take toxicological samples.

Summary of Engine Examination

D. DETAILS OF ENGINE EXAMINATION

The engine was taken to Beegles Aircraft Services, LLC, Greeley, Colorado. On October 30, 2020, the engine was brought to Beegles' repair facility for examination led by an NTSB senior air safety investigator. The examination took place on November 3, 2020. An airframe and powerplants mechanic assisted in the disassembly and inspection of the engine. An inspector from the Federal Aviation Administration observed the examination.

E. SUMMARY OF ENGINE EXAMINATION

Continental TSIO-520-R [s/n 522822]

The exterior of the engine was photographed. The engine was mostly intact and showed signs of fire damage. Much of the right side exhaust piping and the muffler were crushed upward and aft. Most of the aft accessories; alternator, suction pump, and fuel pump were intact. See figures 1-6. The propeller hub and spinner were broken open. The aft portion of the propeller hub remained attached to the crankshaft flange. See figure 9.

The wiring harness, baffling and exhaust were removed and the rocker box covers were removed exposing the engine cylinders rockers, pushrod ends, and intake and exhaust valves. All of these components were undamaged. See figures 7 and 8. The wiring harness leads were removed from the top spark plugs. Plugs 2 and 6 showed heat damage and oil. All plugs showed normal wear.

The propeller hub was removed from the flange. A hub bolt was reinstalled in one of the flange holes and the crankshaft was turned using a crowbar. The rockers and intake and exhaust valves on all six cylinders moved normally. The crankshaft and camshafts rotated smoothly. Additional crankshaft to accessory continuity was observed when the alternator belt and two magnetos drives moved correctly when the crankshaft flange was rotated. Thumb compression was conducted at the top spark plug holes. All cylinders showed good compression.

Fuel System

The fuel screen was removed and examined. The screen was clean showing no debris. See figure 10. The fuel distribution manifold and fuel lines to the cylinder was examined and showed no external damage. The top of the fuel distribution manifold was removed exposing the filter. The filter was clean and showed no debris. See figures 11 and 12.

Magnetos

The left and right magnetos were removed and the wiring harness was removed from the magnetos. Both magnetos were intact and showed some external heat damage. See figures 13 and 14.

Right Magneto, Teledyne Continental Motors Type S6RN-1225 [Mfg No. F06KA148]

The magneto was in good condition. The distributor cover was removed. The magneto coupling was rotated and spark was observed at all six magneto block towers.

Left Magneto, Teledyne Continental Motors Type S6RN-1225 [Mfg No. F06KA167]

The magneto was in good condition. The distributor cover was removed. The magneto coupling was rotated and spark was observed at all six magneto block towers

Oil System

Oil sump crushed upward and broken. Most of the oil had leaked from the breach in the sump. The oil sump plug was in place and safety wired. The filler cap was secure and the dip stick was in place.

The oil filter was removed. There was oil present. The oil collected and examined. The oil was clean, showed good viscosity, and no particulates. The oil filter was cut open. The filter showed no particulate save a few flakes of carbon. See figures 15-17.

Turbocharger

The turbocharger was located at the lower right side of the engine. The turbocharger was intact The case showed some impact marks and heat signatures. The intake ducting was crushed upward. The ducting was removed and the compressor was observed. The compressor showed no damage and rotated freeley. The turbine was also examined. It was intact and showed no damage. It too rotated freely. See figures 18 and 19.

Photographs

Figure 1, Engine Front Side View

Figure 2, Engine, Left Side View

Figure 3, Engine, Aft View

Figure 4, Engine, Right Side View

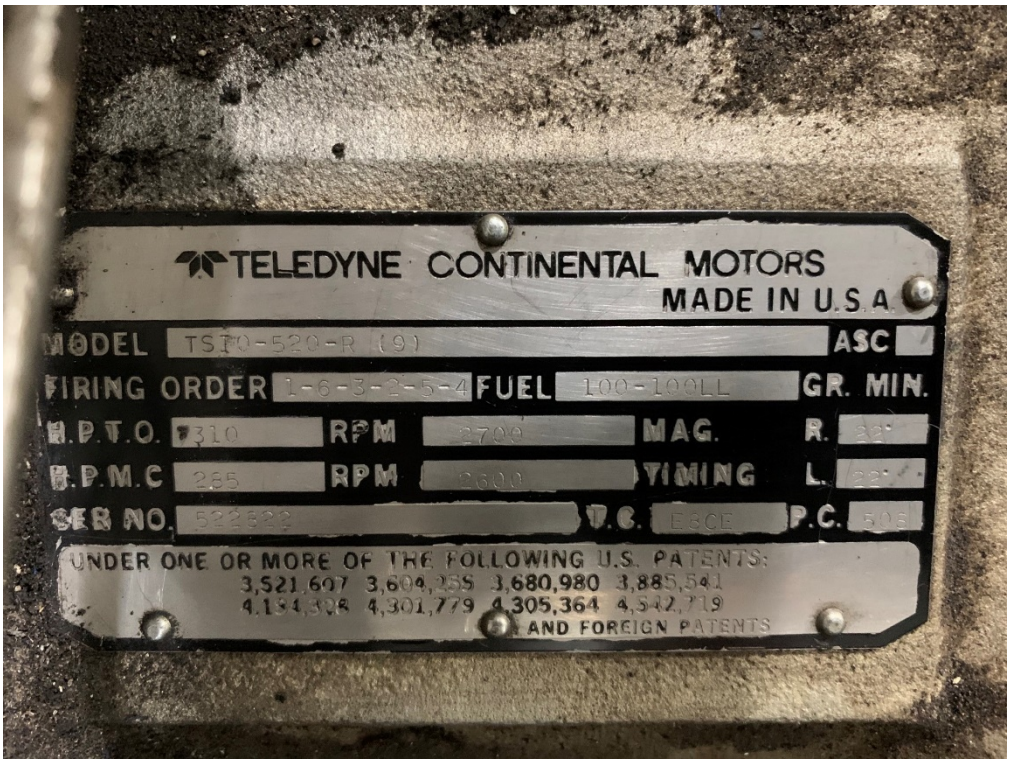

Figure 5, Engine Data Plate

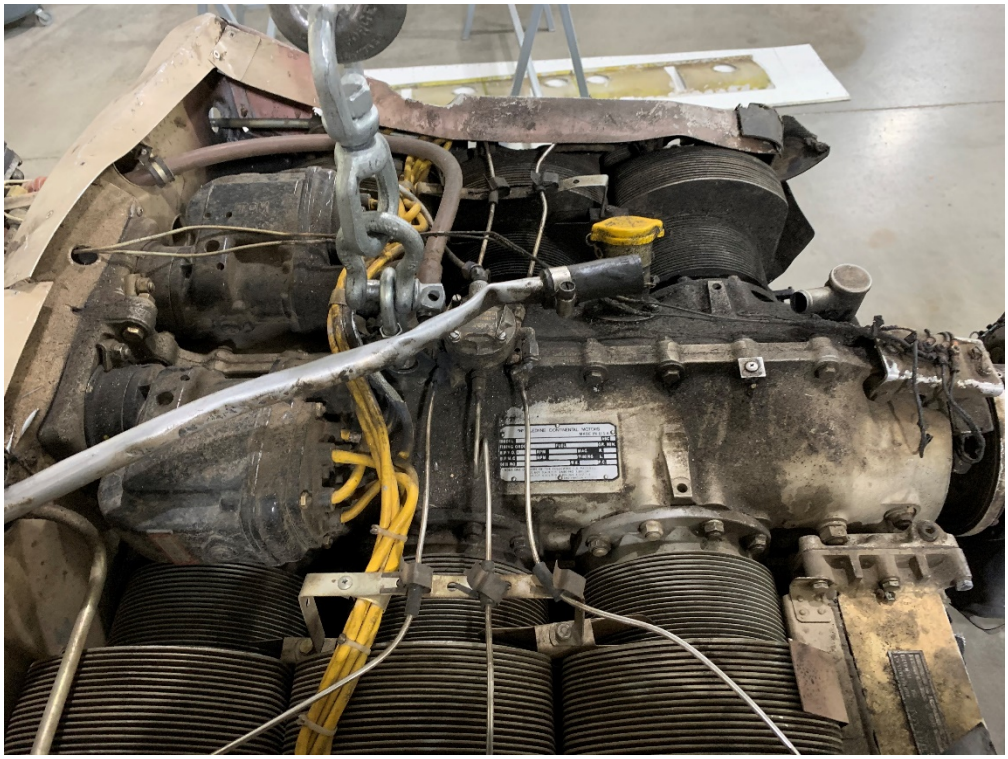
Figure 6, Engine, Top View

Figure 7, Left Side Cylinders

Figure 8, Right Side Cylinders

Figure 9, Remaining Propeller Hub and Spinner

Figure 10, Fuel Screen

Figure 11, Fuel Manifold Valve

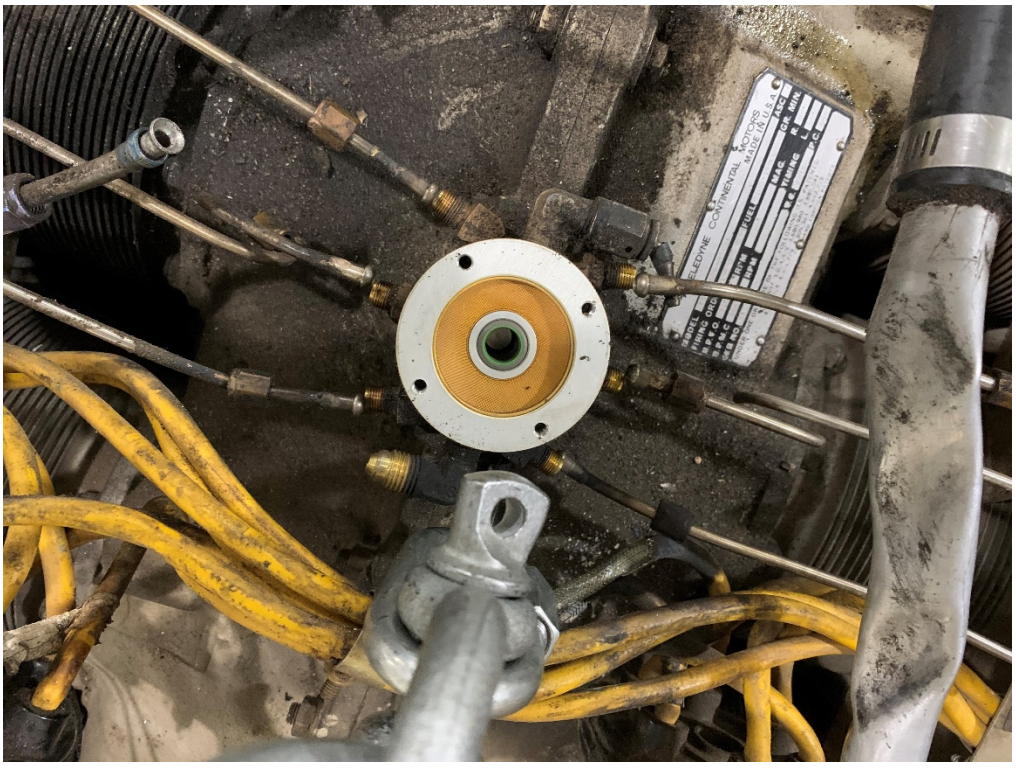

Figure 12, Fuel Manifold Valve Screen

Figure 13, Right Magneto

Figure 14, Left Magneto

Figure 15, Oil Filter

Figure 16, Oil Filter Opened

Figure 17, Oil Filter Componenets

Figure 18, Turbocharger Turbine


Figure 19, Turbocharger Compressor

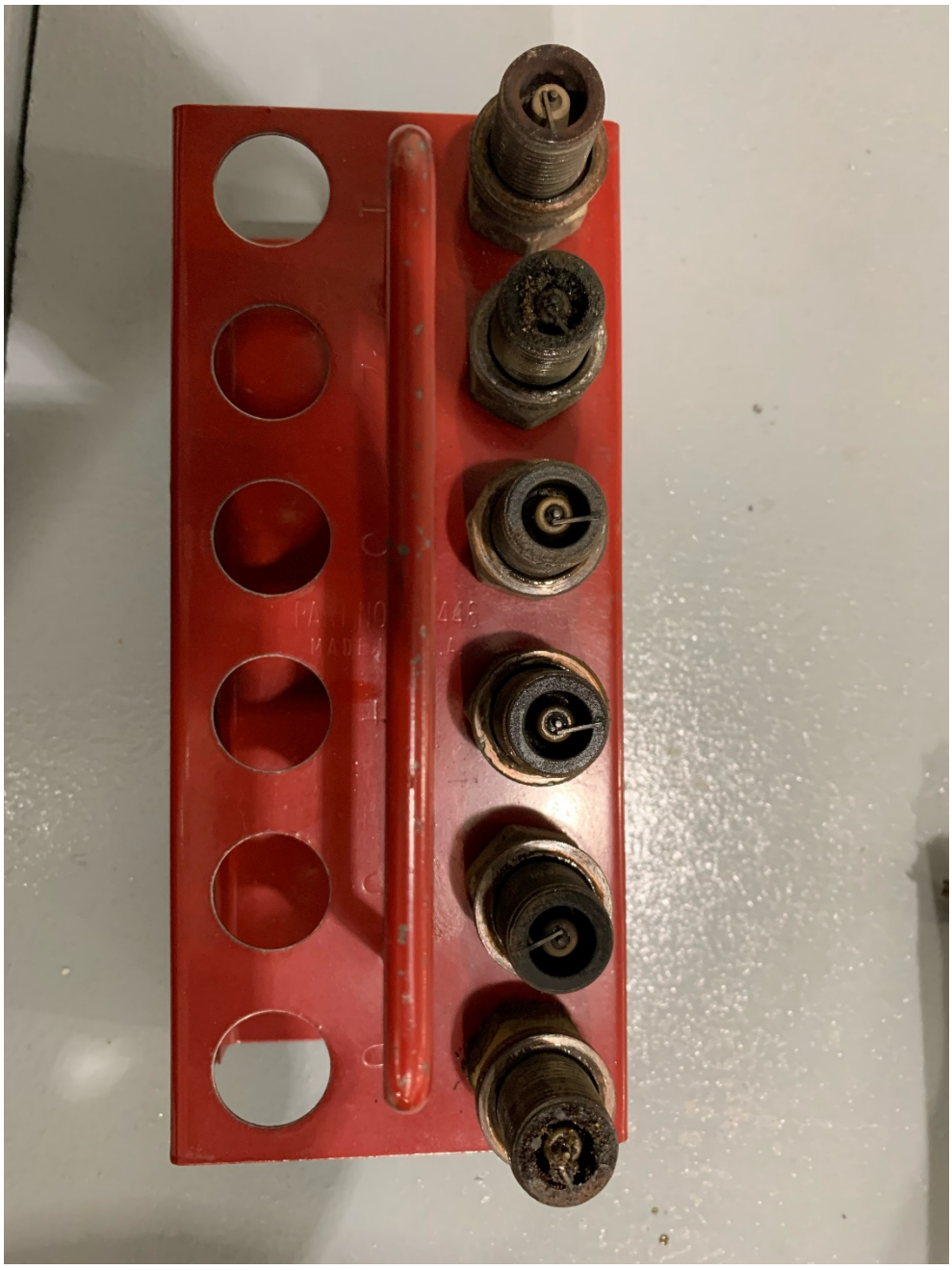

Figure 20, Top Spark Plugs