NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region
April 27, 2016

AIRFRAME AND ENGINE EXAM REPORT

WPR16LA078

This document contains 18 embedded photos.

A. ACCIDENT

Location:	Palm Springs, CA
Date:	March 2, 2016
Aircraft:	Boeing A75N1 (PT17), Registration Number: N63555, Serial #: 75-8914
NTSB IIC:	Howard Plagens

B. EXAMINATION PARTICIPANTS:

Howard Plagens
Senior Air Safety Investigator
Investigator-in-charge (IIC)
National Transportation Safety Board (NTSB)
Federal Way, WA

Mark Pritchett
Aviation Safety Inspector
FAA Scottsdale FSDO
Scottsdale, AZ

C. SUMMARY

Examination of the recovered airframe and engine was conducted on April 28, 2016, at the facilities of Air Transport, Phoenix, Arizona, by the IIC with observation by the FAA.

D. DETAILS OF THE INVESTIGATION

1.0 Airframe Examination

Blue fluid that smelled like aviation gasoline was drained from the left and right fuel drains from the wing fuel tank. There was no visible contamination.

Photo 1 Samples from Fuel Drains

The forward end of the fuselage sustained crush damage around the front cockpit. The throttle lever in the cockpit would not move due to the damage; all linkages were connected from the cockpit to the carburetor. The mixture lever in the cockpit would not move due to the damage; all linkages were connected from the cockpit to the carburetor.

Photo 2 Right Side of Fuselage

Photo 3 Left Side of Fuselage

The fuel selector valve was very stiff due to damage in the cockpit area, but could be moved.

Photo 4 Throttle Quadrant and Fuel Selector Valve

The gascolator was removed and disassembled; it contained a clear blue fluid that smelled like aviation fuel. The screen was clear.

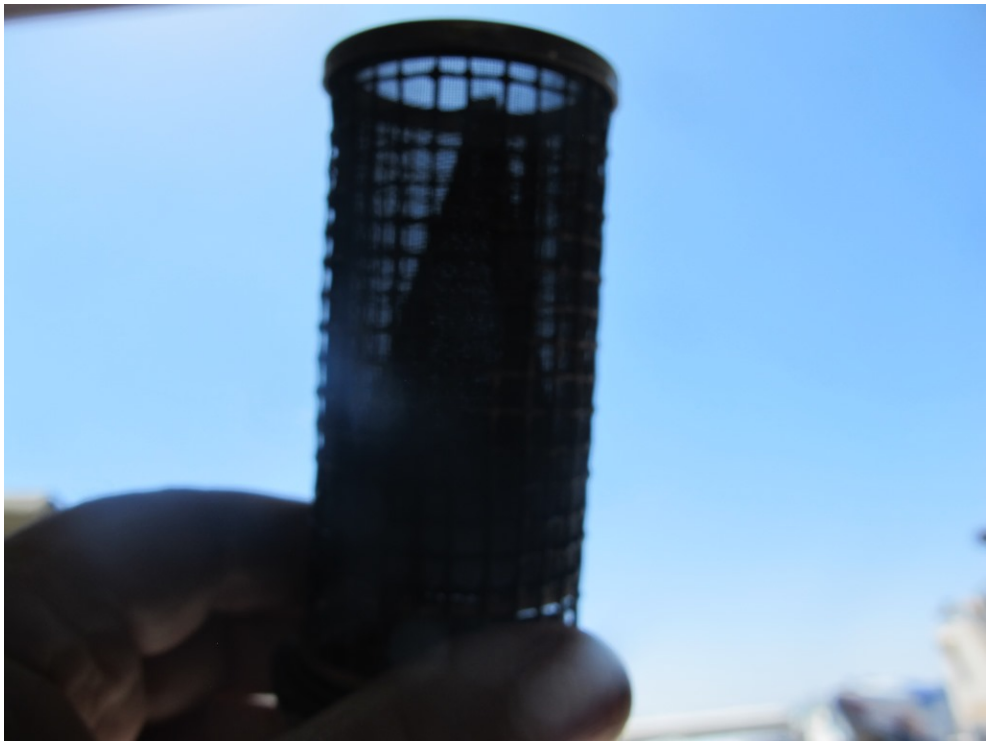

Photo 5 Gascolator Screen

2.0 Engine Examination

The engine was a Continental Motors W670 6N, serial number 6071.

Photo 6 Engine Dataplate

Investigators left the engine in place on the airframe. The radial engine had seven cylinders with number one at the top, and the numbering proceeded clockwise.

The exhaust tube coloration was light brown.

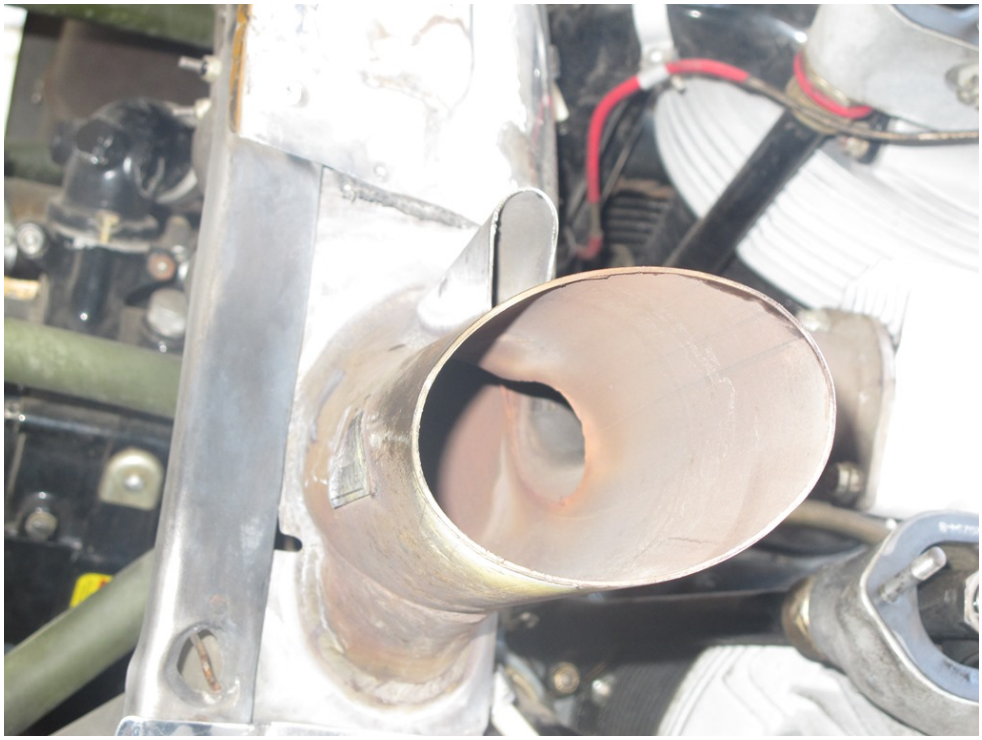

Photo 7 Exhaust Tube

The air filter was clean. There was no discoloration in the intake tube at the filter.

Photo 8 Air Filter

The bottom two cylinders (four and five) sustained aft crush damage. The exhaust head for cylinder number four sustained crush damage, and fractured and separated; the exhaust push rod for was bent and displaced. The head for cylinder number five was crushed aft and separated.

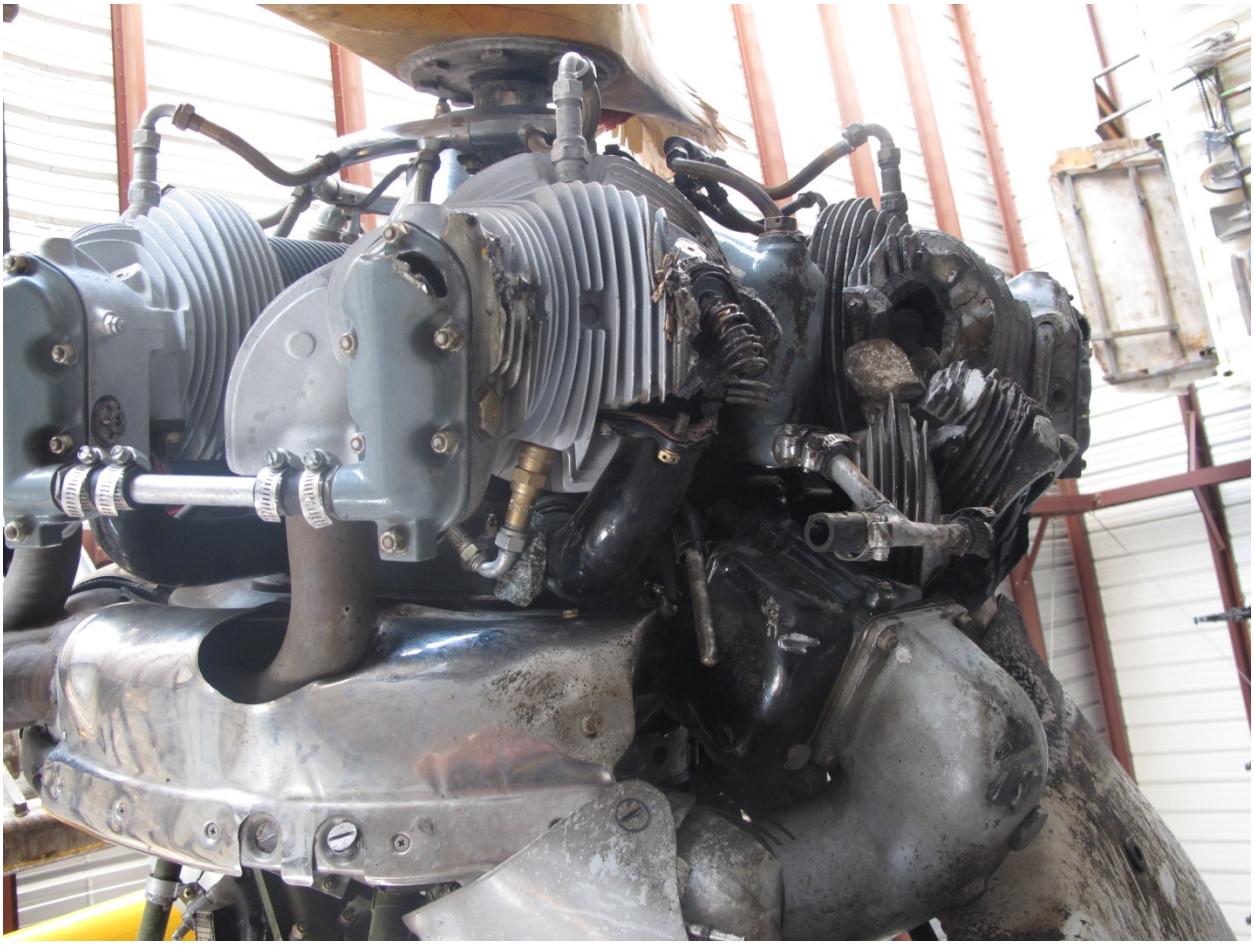

Photo 9 Bottom of the Engine

The front spark plugs were Champion REM 40-E. All center electrodes were circular with no mechanical deformation. Number four (on bottom of engine) was oily. Number five (on bottom) contained gravel; the cylinder had been breached, and dragged on the ground. The remaining spark plug electrodes were gray, which corresponded to normal operation according to the Champion Aviation Check-A-Plug AV-27 Chart.

The back spark plugs were Champion fine wire REM 38-E. All center electrodes exhibited similar wear with no mechanical deformation. The spark plug electrodes were gray, which corresponded to normal operation according to the Champion Aviation Check-A-Plug AV-27 Chart.

Photo 10 Sparlk Plugs

Investigators removed the valve covers. The crankshaft was rotated using the propeller; there were no metallic sounds or binding. All valves except for cylinders number four and five moved approximately the same amount of lift in the firing order of one, three, five, seven, two, four, and six. The gears in the accessory case turned freely. Investigators obtained thumb compression except for cylinders number four and five on all cylinders in firing order.

The ignition harness sustained damage from the postcrash fire on cylinders five and six. There were no impulse couplings on either magneto. While manually rotating the propeller, spark was observed on the front ignition leads for cylinders two, three, and seven. An investigator held the ignition leads, and felt an electrical impulse on front and back leads for cylinders one, two, three, four, and seven, and the front lead for cylinder number five.

The oil screen was clean.

Photo 11 Oil Screen

The carburetor was a Bendix Stromberg Model NAR – 6 G, serial number 5936669.

Investigators removed and disassembled the carburetor. The floats were metal; the bowl contained no fluid. The accelerator pump operated without resistance. The throttle lever would not move; the housing was crushed; the butterfly valve was almost vertical (fully open). The mixture lever moved freely from stop to stop.

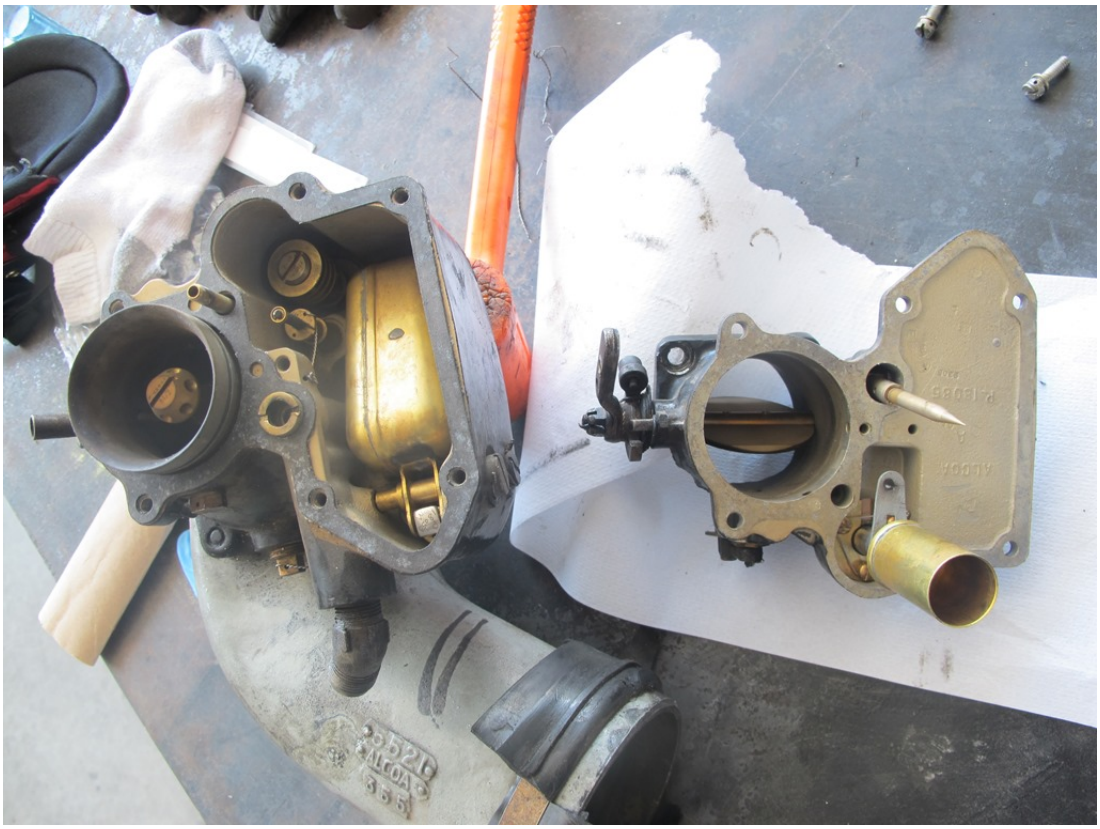

Photo 12 Carburetor

The carburetor heat arm was crushed at the box, and the rod end at the bellcrank fractured and separated along a jagged and angular plane.

Investigators removed the fuel line from the gascolator to the carburetor, and nothing drained out from the line. Investigators then connected the line back to the gascolator, and turned the fuel selector valve on. Blue fluid came out of the line. Investigators removed the line again to look through it, and observed an obstruction near one end of the line. They removed the firesleeve on the hose, and observed that the hose went into the fitting at a slight angle that was not visible with the firesleeve in place. Investigators cut the line close to the obstruction. The inner surface of the hose appeared cut, and curled into the hose at the fitting.

Photo 13 Fuel Line from Gascolator to Carburetor

Photo 14 Line from Gascolator to Carburetor with Firesleeve Removed

Photo 15 Fuel Line and Fitting

Photo 16 Inside of Hose

Photo 17 Obstruction in Hose

3.0 Propeller Examination

The propeller was a two-bladed wooden Sensenich W98AB-66. Both blades fractured along jagged angular planes.

Photo 18 Propeller