NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

June 27, 2012

ACCIDENT SITE, AIRFRAME AND ENGINE EXAMINATION SUMMARY

WPR12FA274

This document contains 0 embedded photos.

A. ACCIDENT

Location:	Veneta, Oregon
Date:	June 23, 2012
Aircraft:	Cessna 172
NTSB Investigator-in-Charge:	Joshua Cawthra

B. EXAMINATION PARTICIPANTS:

Joshua Cawthra
Aviation Accident Investigator
National Transportation Safety Board
Federal Way, Washington

Jarvis Cochran
Aviation Safety Inspector
Federal Aviation Administration
Portland, Oregon

Chris Lang
Air Safety Investigator
Continental Motors
Mobile, Alabama

Ricardo Ascencio
Air Safety Investigator
Cessna Aircraft
Wichita, Kanasa

C. SUMMARY

Examination of the recovered airframe and engine was conducted at the accident site and at the facilities of AvTech Services, Auburn, Washington, once the wreckage was recovered. No evidence of preimpact mechanical malfunction was noted during the examination of the recovered airframe and engine.

D. DETAILS OF THE INVESTIGATION

1.0 Accident Site Examination

Examination of the accident site revealed the following:

GPS Coordinates:

Initial Impact: N44 03.424, W123 23.385 – Elevation: 367'
Main Wreckage: N44 03.412, W123 23.385

Wreckage debris and broken tree limbs were scattered about 80 feet along an approximate 174-degree magnetic heading from a cluster of scraped and broken trees. The right wing was lodged in one of the damaged trees at the beginning of the debris path, about 70 to 75 feet above ground level. The right horizontal and right elevator was found about 20 feet from the first identified point of contact (FPIC) from the trees. The left horizontal, left elevator, vertical stabilizer, and

rudder were located about 40 feet beyond the FPIC. The main wreckage came to rest inverted about 80-feet from the FPIC, oriented on a heading of about 235-degrees magnetic.

2.0 Airframe Examination

Examination of the left wing revealed that the aileron remained attached to the wing via all respective mounts. The flap remained attached via all mounts. The left wing lift strut was separated about 3 feet from the lift strut wing attach point. The leading edge was crushed aft about 1 foot inboard of the lift strut wing attach point, consistent with an impact with a circular object (tree trunk). The left wing appeared to be bent forward about 10 degrees from the area of the flap/aileron junction and impact damage. The left wing fuel pickup fuel line was compromised. The fuel tank cap and seal was intact and undamaged. No fuel was found within the left wing fuel tank, however, a blue stain was observed on the top portion of the left wing about mid span.

The right wing was separated via all its mounts and was located within a tree. The leading edge exhibited a large circular impression about 2 feet outboard of the wing root. The impression extended aft to the main wing spar. The right flap and right aileron remained attached to the wing via all mounts. The right wing fuel tank was found dislodged from the wing structure and was located within the wreckage debris path. The fuel tank cap and seal was intact and undamaged. About 2 gallons of fuel was removed from the fuel tank and multiple holes were observed in the fuel tank.

The fuselage came to rest inverted. The left wing remained partially attached and the right wing was separated from the fuselage at the wing root. The left and right doors were separated. The fuselage structure surrounding the cabin area was compressed. The right side of the fuselage / cabin area was compressed more than the left side. The emergency locator transmitter remained attached to the antenna and was found in the "ARMED" position. FAA personnel reported that upon arriving to the accident site, the ELT was functioning.

The left and right horizontal stabilizers, left and right elevators, rudder, and vertical stabilizer were separated from the fuselage. The right elevator remained attached to the right horizontal stabilizer via its outboard two mounts. The leading edge of the right horizontal stabilizer was crushed aft near the inboard portion of the stabilizer. The trim tab remained attached to its respective mounts. The trim actuator was measured at 1.9 inches, and was extended beyond the manufacturers specified trim tab travel range. The trim tab control cables were separated and were splayed, consistent with overload. The left horizontal stabilizer exhibited a circular leading edge impression about 14 inches from the inboard root, which was crushed aft to the spar. The elevator remained attached to the left horizontal stabilizer via its two outboard mounts. The vertical stabilizer was intact. The lower portion of the rudder was displaced right and exhibited bending and buckling.

Cockpit Instrumentation / Control Documentation:
Throttle: Idle Position and bent downward
Mixture: Full Rich

Primer: In and Locked
Carburetor Heat: About 1/2 way out
Magneto Switch: Both
Fuel Selector Valve: Both
Tachometer: 0 RPM / 1576.88 hours
HOBBS: 0173.4
Master Switch: On
Cabin Heat: Full
Beacon: On
Flap Bar: Stowed / Flaps Up

Continuity of the fuel system was established from the wing attach points throughout the fuel system to the carburetor for all positions on the fuel selector valve, left, right, both, and off.

Flight control continuity was established throughout to all primary flight control surfaces. Several separations of the control cables were observed and were splayed, consistent with overload.

3.0 Engine Examination

The engine remained attached to the fuselage via one of the four engine mounts. The carburetor was partially separated from its mount. The rest of the engine accessories remained attached to the engine via their respective mounts. All of the top sparkplug leads were bent and damaged, consistent with impact damaged. The top spark plugs were removed. All top spark plugs exhibited dark gray, almost black in color deposits within the electrode area and exhibited normal wear signatures when compared to the Champion Check-A-Plug comparison chart. The internal areas of the cylinders were examined using a lighted borescope. The piston heads, cylinder combustion chambers, intake and exhaust valves were unremarkable. The carburetor fuel screen was removed from the carburetor and was free of debris. The propeller was rotated by hand. Rotational continuity was established throughout the engine and valve train.

In order to facilitate an engine run, the carburetor mount flange was repaired using JB Weld, Duct Tape, and Plumbers Putty. The carburetor was reinstalled on the engine and secured. Battery power was applied to the airplane and it was determined that the starter was inoperative. A new starter was installed on the engine. An external fuel source was connected directly to the carburetor fuel inlet port. Battery power was applied and the engine was started using the airframes starter button. The engine ran throughout various power settings to about 1,700 rpm with no anomalies noted. The power was not advanced higher than 1,700 rpm due to the damaged engine mounts. A magneto check was conducted at 1,200 rpm and no anomalies were noted. The engine was shut normally by moving the mixture control to the idle cutoff position.

A postaccident examination of the airframe and engine revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation.

Submitted by: Joshua Cawthra