



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

October 18, 2018

ACCIDENT SITE, AIRFRAME, AND ENGINE EXAMINATION SUMMARY

WPR19FA001

This document contains 4 embedded photos.

A. ACCIDENT

Location:	La Verne, California
Date:	October 1, 2018
Aircraft:	Beech V35, N7997M
NTSB Investigator-in-Charge:	Joshua Cawthra

B. DETAILS OF THE INVESTIGATION

1.0 Accident Site

GPS Location: N34.092450, W-117.792039
Elevation: 955 ft msl

Examination of the accident site revealed that the airplane struck a tree, approximately 50-ft in height, about 900 ft from the approach end of runway 8R and about 185 ft left of the runway centerline. The wreckage debris path was about 400 ft in length, oriented on a heading of about 070° magnetic.

The first identified point of contact (FIPC) was what appeared to be freshly topped trees. A freshly cut tree limb was located about 146 ft beyond the FIPC. Paint chips consistent with the color of the airplane were located about 319 ft from the FIPC. About 30 ft beyond the paint chips was the propeller assembly and an impact crater that was about 2 ft wide and 4 ft in length. Portion of the nose wheel landing gear door, engine cowling, and green right-wing navigation lens fragments were located about 364 ft from the FIPC. The outboard 5 ft of the left wing was located about 370 ft from the FIPC. The main wreckage was located about 394 ft from the FIPC. The airplane came to rest upright on a heading of about 198°. The left aileron was located about 6 ft beyond the main wreckage.

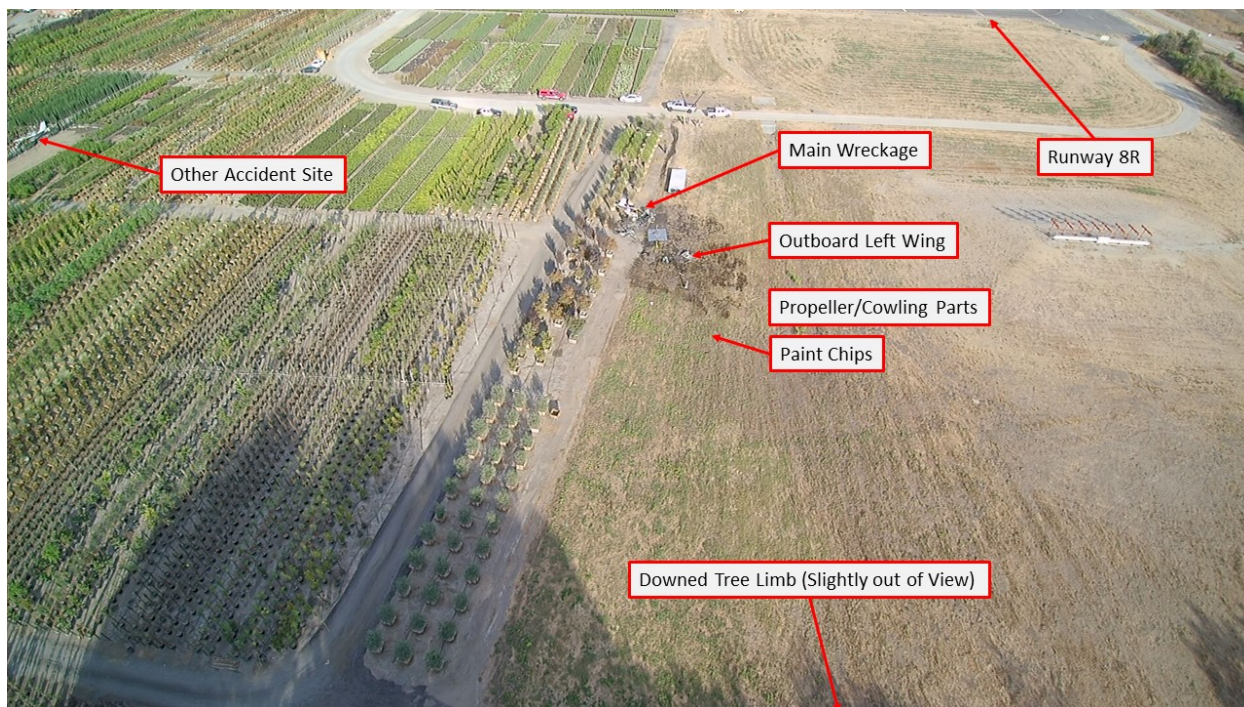


Figure 1: Accident site overview. Image courtesy of the La Verne Fire Department.



Figure 2: Accident site overview. Image courtesy of the La Verne Fire Department.

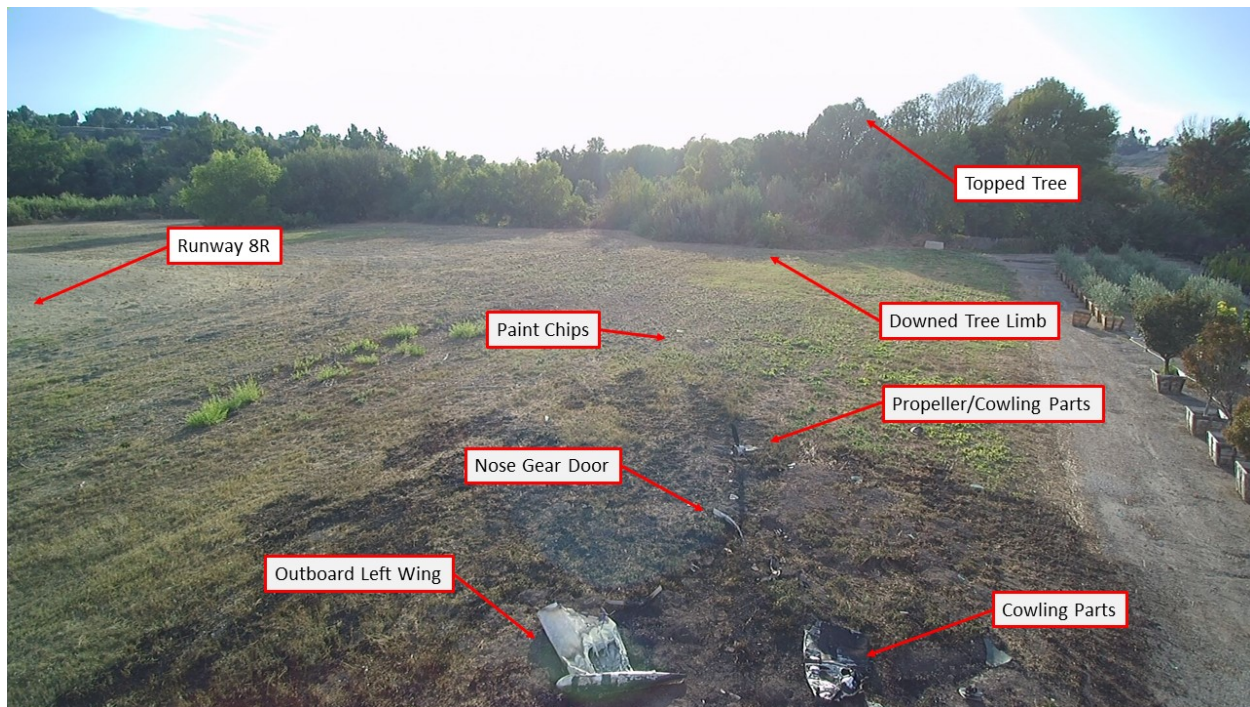


Figure 3: Accident site overview. Image courtesy of the La Verne Fire Department.

The fuselage from the rear seats forward was mostly consumed by fire. The instrument panel, instruments, front seats, and control column were fire damaged. The fuselage structure aft of the rear seats was mostly intact and buckled along the bottom sides of the fuselage.

2.0 Airframe Examination (Accident Site)

The left and right ruddervators remained attached to the empennage. The right ruddervator was undamaged and the trim tab remained attached. The left ruddervator remained attached, however, was displaced downward, beyond full deflection. The trim tab was bent upwards and the cable attach tab was disconnected from the trim tab, but remained attached to the trim control cable.

The engine remained attached to the engine motor mount and exhibited thermal / fire damage. All of the engine accessories, fuel lines, and oil lines appeared attached to their respective fittings and accessory pads. The propeller was separated from the crankshaft (studs pulled out). No visible holes in the engine crankcase was observed.



Figure 4: View of the main wreckage.

The left wing remained attached to the fuselage and exhibited fire damage. The flap remained attached to the wing structure and appeared to be in the “up” position. The left main landing gear appeared to be in the extended position. A majority of the wing structure was consumed by fire. The outboard part of the left wing that was separated was fire damaged. The tip tank remained attached to the wing structure. The leading edge of the wing just inboard of the tip tank was buckled / bent and the tip tank appeared to be displaced/bent slightly inboard. The aileron was separated and exhibited bending and buckling throughout its span.

The right wing remained attached to the fuselage and was fire damaged. The wing structure was mostly consumed by fire. Remains of the flap and aileron were observed. The tip tank was partially attached to the wing. The right main landing gear appeared to be in the extended position.

Control continuity was established throughout the main wreckage from the cockpit controls aft to the elevons and to both aileron bellcranks. Two separations were observed in the left aileron control cable and appeared to have been cut by first responders.

The wreckage was recovered to a secure location for further examination.

3.0 Wreckage Examination

The recovered wreckage was examined at the facilities of Air Transport, Phoenix, Arizona, on October 17, 2018.

3.1 Airframe

Aileron control cable continuity was established from the bellcranks to the wing roots. Control continuity was established from the empennage to the aft spar. The area forward of the aft spar was consumed by fire. The right flap actuator was not located. The left flap actuator was measured to be 3 inches, which equated to about 10 degrees extended. The ruddervator trim actuator measured .65 inches, which equated to 20 degrees nose down.

The fuel selector valve was separated from the fuselage, all fuel lines were fire damaged, and the "B" nuts remained secure. The selector valve was found in the "OFF" position. Air was applied to the outlet port of the fuel valve, and continuity was established throughout all of the fuel valve tank positions.

No fuel remained in the strainer, and soot was observed within the screen.

The landing gear was found in the extended position. The actuator arms from the gearbox were fractured.

The front seat restraints were not located. The front seats were mostly consumed by fire.

3.2 Engine

The engine was separated from the airframe and exhibited thermal damage. All six cylinders remained attached. The starter and propeller were separated from the engine. The rocker box covers, both magnetos, top spark plugs, fuel pump, alternator, and vacuum pump were removed. The crankshaft was rotated using a hand tool attached to the aft part of the crankshaft. Rotational continuity was established throughout the engine and valve train. Thumb compression and suction was obtained on all six cylinders. All six cylinders were examined internally using a lighted borescope and were all found unremarkable.

All six fuel injector nozzles remained attached to each cylinder. The fuel lines remained attached to the fuel injector nozzles. The fuel injectors were removed and found free of debris.

The fuel manifold valve was intact and remained attached to the engine. The manifold valve was disassembled and the internal components exhibited thermal damage. The remnants of the diaphragm and screen exhibited normal operational signatures.

The throttle body fuel control unit exhibited impact and thermal damage. The throttle control arm was free to rotate around the shaft. The arm was removed and exhibited impact damage. The metering unit was disassembled and exhibited thermal and normal operational signatures.

The fuel pump was impact and thermally damaged. The drive coupling was intact and undamaged. The fuel pump drive shaft rotated freely by hand. The fuel pump was disassembled, the internal components exhibited thermal damage and normal operational signatures.

The fuel flow transducer exhibited thermal damage. The unit was removed, and air was applied to the inlet port, and expelled normally from the outlet port.

The upper spark plugs exhibited normal operating and wear signatures. The bottom spark plugs were inspected with a borescope and exhibited normal operational signatures.

The ignition harness was thermal and impact damaged.

The left magneto was thermally damaged. All six posts produced spark when the driveshaft was rotated by hand. The magneto was partially disassembled and all internal components were intact and thermally damaged.

The right magneto was thermally damaged. Spark was not produced when the driveshaft was rotated. The magneto was disassembled and the capacitor was found thermally damaged. The capacitor from the left magneto was installed, and the drive shaft was rotated. Spark was observed on all six posts.

The left and right exhaust remained attached to the engine and exhibited thermal and impact damage. The heat shroud was removed from the cabin heat exchanger, and no evidence of leaks were observed. No internal debris was observed.

The induction system exhibited thermal and impact damage signatures. No evidence of any induction leaks were observed. No blockages were observed.

The oil filter was free from the engine and exhibited impact and thermal damage. The oil filter housing was cut open and the filter element was free of metallic debris.

The propeller governor remained attached to the engine and exhibited impact and thermal damage. The gasket screen was free of debris. The drive shaft rotated by hand. The internal fly weights were intact.

The propeller was separated from the engine. All three propeller blades remained attached to the hub assembly, however, one of the propeller blades was loose within its mount. The blades were labeled A, B, and C for identification. Propeller blade A rotated freely within the hub and exhibited minor aft bending, leading edge polishing, and slight chordwise scratches near the blade tip. Propeller blade B exhibited minor aft bending near the blade tip and chordwise scratches throughout the outboard half of the blade. Propeller blade C was unremarkable.

Submitted by: Joshua Cawthra