



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

September 1, 2020

AIRFRAME & ENGINE EXAMINATION SUMMARY

WPR20LA170

This document contains 9 embedded photos.

A. ACCIDENT

Location: Lander, Wyoming
Date: July, 7, 2020
Aircraft: Kitfox 1, N595KF
NTSB Investigator-in-Charge: Stephen Stein

B. DETAILS OF THE INVESTIGATION

1.0 AIRFRAME EXAMINATION

Examination of the recovered wreckage revealed that the wreckage was fire damaged from just behind the cockpit seats to the empennage. Most of the fabric covering was burned/melted, exposing the structure underneath. The wings remained attached to the airframe, however, were folded aft, in a manner consistent with transport. Both ailerons were separated from the wings and located within the recovered wreckage. The vertical stabilizer, rudder, horizontal stabilizers, and elevators remained attached to the airframe. The engine remained attached to the airframe structure.



Figure 1: Recovered wreckage as observed.



Figure 2: Recovered wreckage as observed.

Both fuel tanks were secured to their respective wing structure. The right fuel tank was intact, appeared to be undamaged, and contained an unmeasured amount of water (consistent with being submerged in water, and verified with water finding paste). The left fuel tank was fire damaged and partially burnt away.

Flight control continuity was established throughout from the cockpit controls to all primary controls. The elevator torque tube was separated just aft of the seats and exhibited impact and fire damage signatures. Multiple torque tubes for aileron control were impact damaged.



Figure 3: Control linkages, note the elevator torque tube damage.

The cockpit area was impact damaged. The mixture was about ½ inch out from full rich, throttle was full forward, primer was in and locked, fuel selector valve was in the on position. The magneto 1 switch was in the “up” position, and the magneto 2 switch was in the down position. The HOBBS meter indicated 593.1 hours. The fuel pump was in the “middle” position.

When battery power was applied to the electric fuel pump, the pump expelled liquid out of the outlet port. The gascolator (airframe fuel filter) was intact and undamaged. The gascolator bowl was removed and contained liquid consistent with water. Additionally, a slight amount (few flakes) of what appeared to be dirt debris was observed within the gascolator bowl. The gascolator screen was free of debris.

The coolant tank contained liquid and appeared to remain intact.

No evidence of any preexisting mechanical malfunctions were observed with the airframe.

2.0 Engine and Propeller Examination

Examination of the Rotax 582 revealed that all engine accessories remained attached. The propeller assembly was removed, and the fly wheel/gear box rotated freely. Due to the engine being equipped with a clutch assembly, rotational continuity could not be established, as the disposition of the recovered wreckage prevented sufficient access to the rear of the of the engine to remove the starter.



Figure 4: View of the engine.

The spark plugs were intact and undamaged with the exception of the front cylinder, aft plug, which was impact damaged. The spark plugs were removed and exhibited dark/black deposits within the electrode area. The ignition harness was intact and appeared to be undamaged. The electronic ignition boxes were intact and not damaged.



Figure 5: Removed spark plugs.

The exhaust Y pipe and cylinder head were removed to allow examination of the pistons. No evidence of any scoring or metal transfer was observed on either piston.



Figure 6: View of one piston through the exhaust port.

The carburetors remained attached to the engine. All fuel lines appeared to have remained secure. The carburetors were removed and disassembled. The internal screens were free of debris. The floats were intact on both carburetors. The needle valves on both carburetors were unremarkable. The internal areas of the carburetor were wet with water (verified with water finding paste). A small amount of white paste like substance was observed in both float bowls. According to a representative from Rotech Flight Safety, the substance is consistent with water contamination mixing with fuel.



Figure 7: Debris within the carburetor float bowl.



Figure 8: Debris within the carburetor float bowl.

The propeller remained attached to the engine crankshaft. One of the three blades were was damaged, and separated from the metal blade spar about 6 inches from the blade root. The blade spar was bent about 90°. The remaining two propeller blades were not damaged. Some evidence of corrosion (rust deposits) were observed on the cylinder walls. A normal amount of combustion deposits were observed on the piston heads.



Figure 9: Removed propeller blades.

No evidence of any preexisting mechanical malfunction was observed with the engine or propeller.

Submitted by: Joshua Cawthra