



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region
January 23-24, 2016

EXAM REPORT

WPR17LA046

This document contains 8 embedded photos.

A. ACCIDENT

Location: Paradise, MT

Date: January 3, 2017

Aircraft: Softex Investment LLC V-24L, Registration Number: N710XP, Serial #: 14-03-05

NTSB IIC: Howard Plagens

B. EXAMINATION PARTICIPANTS:

Howard Plagens
Senior Air Safety Investigator
National Transportation Safety Board
Desert Hot Springs, CA 92240

Bobby Radtke
Principal Maintenance Inspector
Federal Aviation Administration
Helena, MT 59602

Kate Benhoff
Air Safety Investigator
National Transportation Safety Board
Federal Way, WA 98003

C. SUMMARY

On January 3, 2017, about 0930 mountain standard time, an experimental amateur-built Softex Investment LLC V-24L, N710XP, made an off airport landing near Paradise, Montana. The owner was operating the airplane under the provisions of Title 14 Code of Federal Regulations (CFR) Part 91. The airline transport pilot and one passenger sustained serious injuries. The airplane sustained substantial damage. The cross-country personal flight departed Missoula, Montana, about 0830 with a planned destination of Seattle, Washington. Visual meteorological conditions prevailed, and no flight plan had been filed.

The pilot stated that the purpose of the flight was to return the airplane to its home base in Seattle. Damage to a left propeller blade had been discovered on a previous flight in July while the airplane was in transit from Oshkosh, Wisconsin, to Seattle. After those repairs, an attempt to make the return flight under visual flight rules (VFR) was unsuccessful, and the airplane returned to Missoula where damage was again discovered on the left propeller. The propeller was removed, sent to a repair station for disassembly and repair, and installed back onto the airplane. The accident flight was another attempt to return to Seattle under VFR conditions.

The pilot stated that the airplane was about 2,000 feet above ground level when a severe vibration developed. He applied maximum power to both engines, but could not get the airplane to maintain altitude; it began to descend rapidly. He landed in an open area of a railroad yard.

Examination of the recovered airframe was conducted January 24, 2017, at the facilities of Arlin's Aircraft Services, Bozeman, Montana.

No evidence of preimpact mechanical malfunction was noted during the examination of the recovered airframe and engines.

D. DETAILS OF THE INVESTIGATION

1.0 Airframe Examination

Investigators from the NTSB, FAA, and technical advisors to the accredited representative examined the wreckage at Arlin's Aircraft Services, Bozeman, Montana on January 24, 2017.

The wreckage examination revealed no anomalies that would have precluded normal operation of the airframe or engine.

The airplane remained mostly intact with the empennage separated from the fuselage; both wings were removed to enable transportation from the accident site to the examination facility. The right engine separated from the right wing during impact. The right wing was intact and the flight control surfaces remained attached to the wing. The left wing tip separated near the mid-point of the left aileron. The elevator and rudder remained attached to the empennage section. Flight control continuity of both ailerons was established to the wing separation point and from the wing separation points on the fuselage to the yoke. Rudder and elevator control continuity was established from the rudder and elevator to the empennage separation point and from the empennage separation point to the rudder pedals and yoke, respectively.

The fuel selector valves within the cockpit were in the off positions. The throttle arm, mixture arm, carburetor heat arm, and governor arm followed control movement, and moved freely from stop to stop.

The throttle was in the full rich position. The mixture was in the full rich position. The carburetor heat valve was in the full ON position.

The right gascolator was removed from the right wing and contained a clear blue fluid; the screen was clean. Investigators retained a sample of the fluid for further investigation. The left gascolator was breached during the impact sequence.

Investigators removed fuel lines and did not observe any blockages.

2.0 Engine Examination

LEFT ENGINE EXAMINATION

The left engine was a Lycoming YIO-320-D1B, serial number EL-6259-55E.

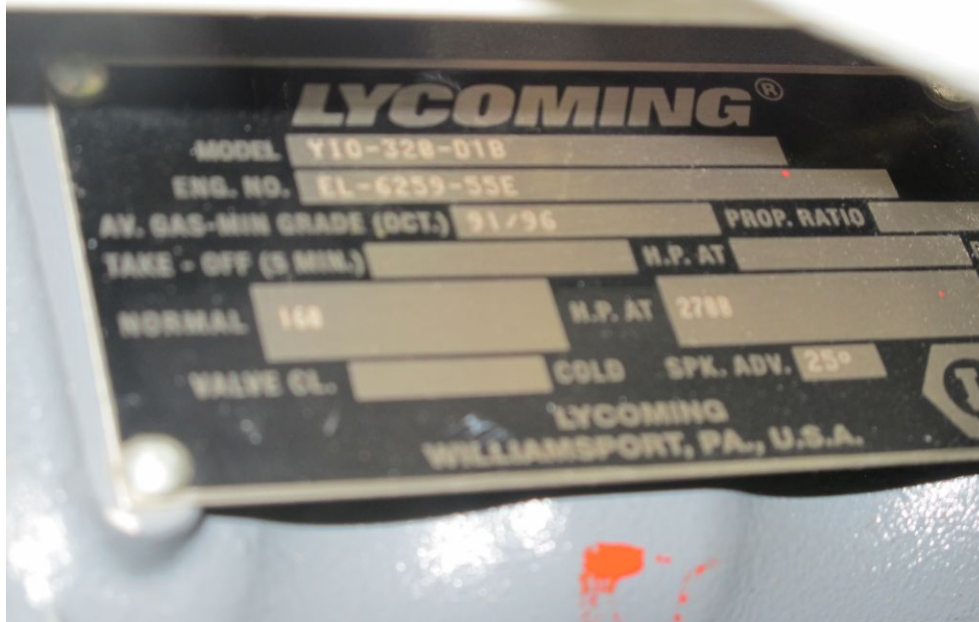


Figure 1: Left Engine Data Plate

Investigators left the engine in place on its mount. They manually rotated the crankshaft with the propeller. The crankshaft rotated freely, and the valves moved approximately the same amount of lift in firing order. Investigators obtained thumb compression on all cylinders in firing order.

The investigators also removed the spark plugs, which were Champion REM38E. All center electrodes were circular and clean with no mechanical deformation, except for the top plug on cylinder No. 3, which exhibited black soot, and the bottom plug on cylinder No. 3, which exhibited black soot and was oily. The spark plug electrodes were light gray, which corresponded to normal operation according to the Champion Aviation Check-A-Plug AV-27 Chart.



Figure 2: Spark Plugs from Left Engine

Investigators connected the spark plugs to their respective ignition leads and grounded the plugs. They manually rotated the magnetos, and both magnetos produced sparks at all plugs except the top spark plug in cylinder No. 2 and the bottom spark plug in cylinder No. 1.

The oil filter was removed and the screen appeared clean. Investigators did not observe any discoloration or debris within the oil.

The fuel filter was disassembled. A pale blue fluid was inside that smelled similar, but slightly different than 100LL aviation fuel contained “sand-like” debris. The same “sand-like” debris remained within the fuel filter container after the fluid was drained. Investigators retained a sample of the fluid for further examination.



Figure 3: Fuel Filter from Left Engine



Figure 4: Fuel Sample from Left Engine

The fuel pump contained a blue fluid inside that smelled more like 100LL aviation fuel than the liquid in the fuel filter. The fuel pump's rubber diaphragm was unbroken. The rubber diaphragm in the fuel distribution was unbroken, and the fuel nozzles were open.

The flow divider was opened, and its diaphragm was pliable and free of cracks. The fuel lines remained intact.

RIGHT ENGINE EXAMINATION

The right engine was a Lycoming YIO-320-D1B, serial number EL-6260-55E. The engine separated from the right wing during impact; investigators placed it on a stand and slung it from a hoist.



Figure 5: Right Engine in Hoist

They manually rotated the crankshaft with the propeller. The crankshaft rotated freely, and the valves moved approximately the same amount of lift in firing order. The fuel pump plunger moved up and down, and the gears in the accessory case turned freely. Investigators obtained thumb compression on all cylinders in firing order. The throttle, mixture, and propeller control levers moved freely from stop to stop.

Investigators removed the spark plugs; all center electrodes were circular and clean with no mechanical deformation. The bottom spark plugs on cylinder No. 1 and No. 2 were oily, which is consistent with how the engine tilted during transportation. The spark plug electrodes were gray, which corresponded to normal operation according to the Champion Aviation Check-A-Plug AV-27 Chart.



Figure 6: Right Engine Top Spark Plugs



Figure 7: Right Engine Bottom Spark Plugs

Investigators connected the spark plugs to their respective ignition leads and grounded the plugs. They manually rotated the magnetos, and both magnetos produced sparks at all plugs.

The oil filter was removed and the screen appeared clean. Investigators did not observe any discoloration or debris within the oil.

The fuel pump's rubber diaphragm was unbroken; investigators activated the pump arm and a light blue fluid squirted out. They retained a sample of the fluid for further examination. The rubber diaphragm in the fuel distribution valve was unbroken, the screen was clean, and investigators did not observe any contamination. The fuel nozzles were open, and the screens were clean.

The fuel filter was disassembled. A pale blue fluid was inside that smelled similar, but slightly different than 100LL aviation fuel contained “sand-like” debris, consistent with the left engine. The same “sand-like” debris remained within the fuel filter container after the fluid was drained. Investigators retained a sample of the fluid for further examination.

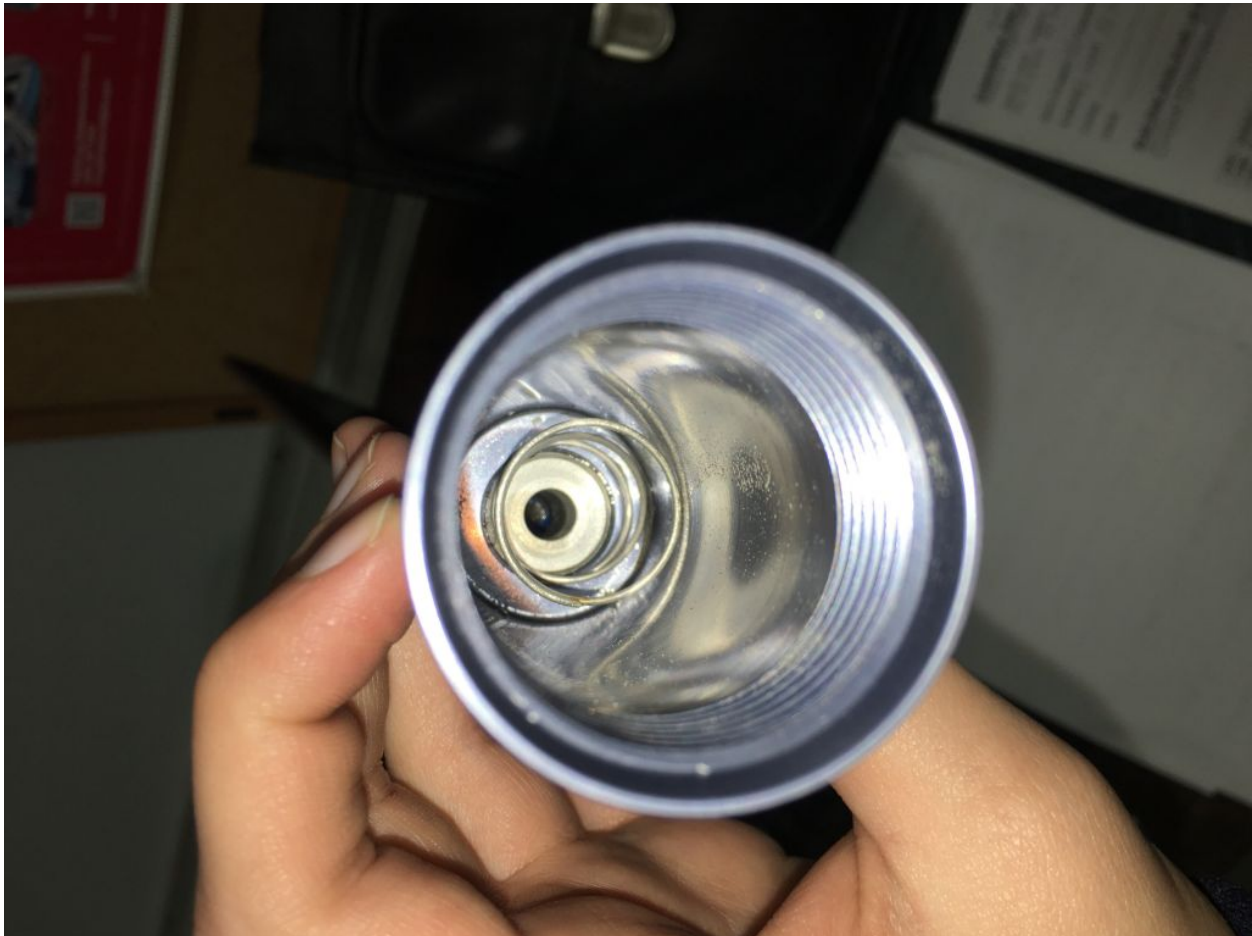


Figure 8: Right Engine Fuel Filter

The flow divider was opened, and its diaphragm was pliable and free of cracks. No fuel was observed within the divider cavity, or any fuel lines forward of the engine driven fuel pump.

3.0 Propeller Examination

LEFT ENGINE PROPELLER EXAMINATION

The three bladed, constant-speed, wooden propellers were MT-Propeller USA Inc. MTV-12-C-C-F/CFLD180-57, serial numbers AFA-51918, AFA-51919, and AFA-51920. The propeller blades all fractured and separated midspan and had angular edges.

RIGHT ENGINE PROPELLER EXAMINATION

The three bladed, constant-speed, wooden propellers were MT-Propeller USA Inc. MTV-12-C-C-F/CFLD180-57, serial number 140249. Two propeller blades did not have serial number stickers. The propeller blades all fractured and separated midspan and had angular edges.