

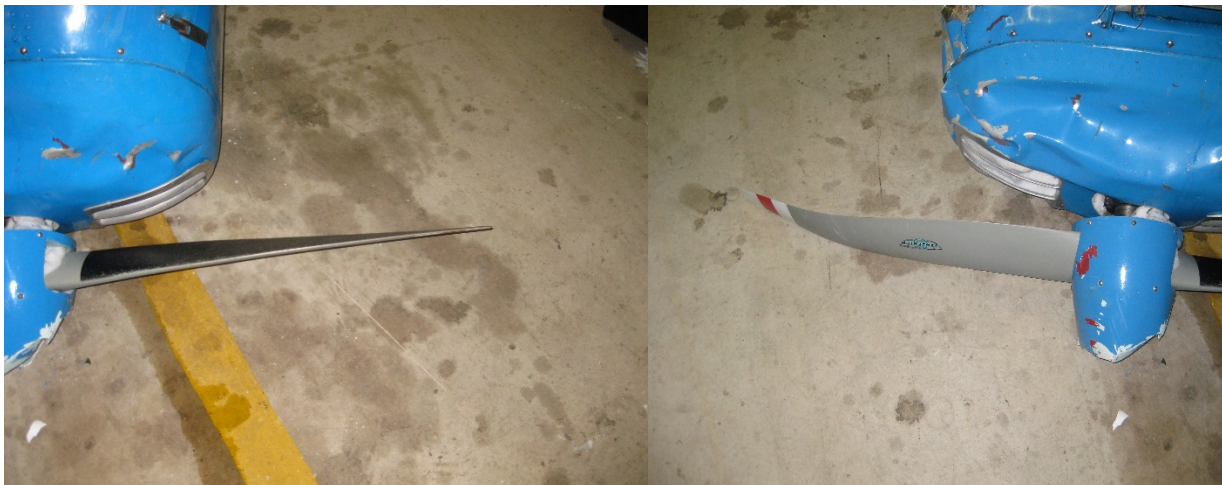
Stinson 108 aircraft accident, aircraft evaluation.

On January 24, 2019 I traveled with inspector Joe Saunders to Shawano WI to perform an evaluation of a Stinson 108 aircraft after it was involved in an accident where it was reported that the engine lost power and stopped running prior to the crash. As a result of the crash the aircraft ended up inverted in a ditch alongside a road. The aircraft was moved from the accident site to a hangar at the Shawano airport prior to our arrival and was left in the inverted position.

Upon arrival at the Shawano airport we were met by hanger owner Bruce who escorted us to the hangar. We were also joined by a deputy Sheriff from the county who assisted during the evaluation. We began our evaluation with a walk around of the aircraft taking photos and general inspection of the aircraft. We noted that airframe sustained very substantial damage to both wings and the tail section. The fuselage is also bent and twisted. Tail surfaces are substantially damaged. The left side landing gear is crushed and the prop is bent slightly.



Inspection of the prop indicated that the engine was not likely operating at the time of impact.



We then focused on the engine for a teardown evaluation. Since the aircraft was still inverted we started by removing the bottom cowl from the airframe.



Upon removal we noticed that there was a wire harness that should have been connected to the carburetor air box temperature bulb that were broken off.



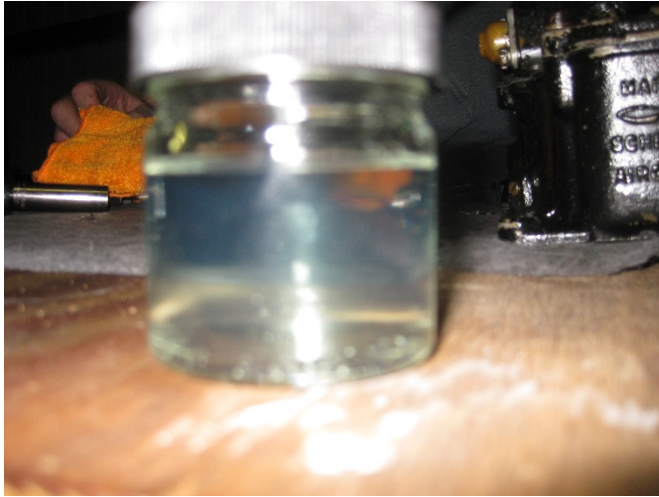
We didn't notice anything else out of place inside the engine. We established continuity to the throttle and carb heat from the appropriate knobs on the instrument panel. We then proceeded to drain fuel from the fuel filter mounted on the firewall into a glass jar for examination, approximately 1 cup was removed. The fuel was taken from the outlet of the fuel filter assembly. The fuel was mostly clear with a slight blue tint.

No water was noted in the fuel and there was minor presence of dirt or debris. We took apart the filter assembly. There was some minor dirt and debris found within the filter but no signs of disruption of fuel flow.

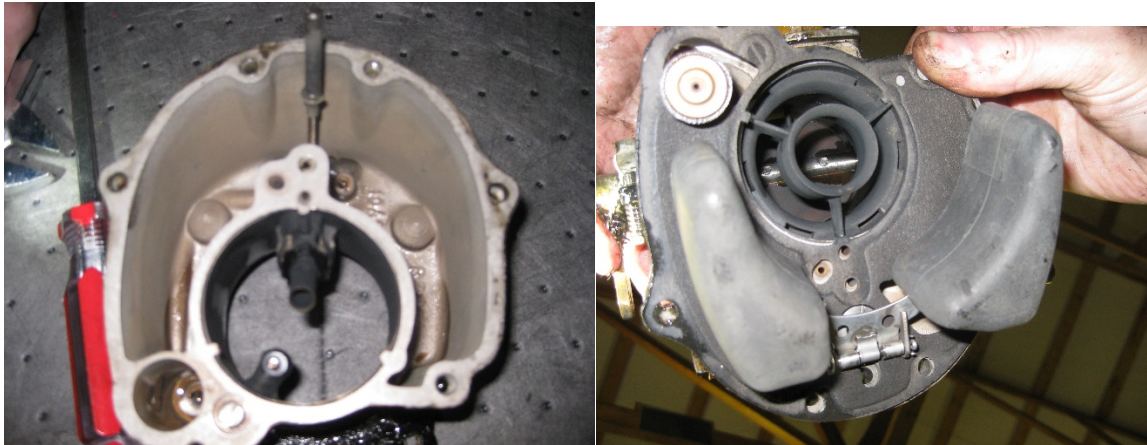


We then removed the carburetor from the engine and took it apart on a bench. Prior to disassembly we drained the remaining fuel from the float bowl into a glass jar, approximately $\frac{1}{4}$ cup was drained. The

fuel was clear with a slight blue tint color, no debris or water was noted in the fuel.



Note that intake manifold had some fuel puddles in it in it, likely fuel drain out of the carb from being in an inverted position. We disassembled the carburetor. There was no abnormalities found during the disassembly. The needle and seat operated normally. No obstructions were noted in the carb inlet. No dirt or debris was found in the float bowl. We removed the main jet from the carb body, no debris was noted in the jet, air could be easily blown through the jet.



We then moved to examination of the spark plugs, all 12 plugs were removed from the engine and marked with their location. All plugs had normal wear with no signs of lean engine operation. With the current position of the plane the propeller could not rotated a full 360 degrees. The aircraft was raised using an automotive style engine hoist attached to the engine mount to allow rotation. With the plugs removed the engine rotated 360 degrees smoothly. There was a noticeable click during rotation attribute to an input coupler. We established valve train continuity by removing the valve covers from the heads of the engine and rotating the prop. All valves, rocker arms, and pushrods operated normally. When the valve covers were removed a large amount of oil drained from the top of the heads, oil was present in this area due to the inverted position of the engine. When the engine was rotated fuel ran out of two of the spark plug holes, again it likely gathered there due to the inverted position of the engine.

We removed the oil pan from the engine to evaluate the oil pick up and the crankshaft. No abnormal items were noted inside the lower crankcase.

We checked that there was spark from both the magnetos by turning the ignition switch to the on position and rotating the prop. There was spark noted at various spark plug leads with the switch in both, left, and right positions.

Lastly we established that there is compression in all cylinders by reinstalling one spark plug in each cylinder and holding a thumb over the opposite plug hole. All cylinders exhibited compression using this method.

This concluded the engine inspection for this aircraft.

Prior to leaving the hangar we removed temperature bulb from the carburetor air box as well about 10 inches of the wires that were broken off the cannon plug connector. Examination of those items is not conclusive that they were broken off before the crash but their general condition would lead us to believe they were not operational.







