

On October 15, 2017, about 1000 mountain daylight time, an experimental amateur-built ~~tailwheel-equipped~~ Barber Turbine Cubs PA-18, N181TJ, nosed over during a precautionary landing near Skull Valley, Utah. The private pilot and passenger were not injured. The airplane sustained substantial damage to both wings and empennage. The airplane was registered to and operated by the pilot under the provisions of Title 14, Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed and no flight plan was filed for the local flight ~~which that~~ originated from West Jordan, Utah, about 0915.

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~~In a written statement to the National Transportation Safety Board (NTSB) investigator in charge (HC),~~ The pilot reported that ~~prior to departure, he completed after~~ a thorough pre-flight inspection. ~~As part of that procedure, he including checking for water in the fuel system for water by sumping the fuel tanks, which resulted in no water being found. He stated that the cabin heat was on for the entire flight, due to an outside air temperature of 41° F.~~

~~, he conducted a local daytime flight.~~ The pilot stated that he ~~had just~~ completed a low altitude pass at an altitude of about 250 to 300 feet above ground level and applied power to observe an object on the ground and was applying power to initiate a climb when. ~~During the application of power, the engine stumbled slightly and seemed to hesitate. H~~The pilot applied carburetor heat due to concerns about after observing the outside air temperature to be 41° F and thinking maybe carburetor ice and then subsequently "applied power further to full power." - The pilot further stated that he applied full power and the engine again seemed to hesitate, and ~~the pilot elected decided~~ to initiate a precautionary landing to an open salt flat area to investigate the problem.

The pilot ~~further~~ reported that he conducted a tail low wheel landing and ~~when as~~ the airplane touched down, ~~as weight was transferred to the wheels, the tail raised and the airplane it~~ nosed over and came to rest on its back. The pilot stated that after he exited the airplane, he Following the accident, the pilot noted that both main wheel brakes were engaged, ~~when he attempted to rotate both the left and right main wheels.~~ He added that neither ~~he nor himself or~~ his passenger applied pressure to the heel brakes pedals during the landing sequence.

~~During a telephone conversation with the pilot, he reported that he was using cabin heat during the entire flight due to the outside air temperature.~~

Review of a video provided by the pilot's mechanic, ~~revealed~~ tire tracks, about 20 to 25 ft in length and consistent with both main landing gear tires, were present on the landing surface, that following the accident, the right main wheel was difficult to rotate.

The airplane was equipped with two brake master cylinders, plumbed to a central reservoir mounted between and above the master cylinders, located beneath the front seat. The master cylinder pedals were connected to the front brake pedals via a rod on each side. The master cylinders are of a design that allowed hydraulic fluid from a separate vented reservoir to gravity feed into the master cylinder or flow back into the hydraulic reservoir to compensate for fluid expansion. An internal check valve that restricts hydraulic fluid movement from the master cylinder to the reservoir actuates if the master cylinder shaft is depressed about 1/16th of an inch.

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Examination of the recovered wreckage revealed that ~~both wings were removed to facilitate transport of the wreckage. The airplane was equipped with a Dynon FlightDEK-D180, which has an option to provide carburetor air temperature. Power was applied to the airframe, and the FlightDEK-D-180 functioned normally.~~

~~The cabin heat vent, located at the base of the firewall, aligned in the middle of the airframe, was free of restrictions, and the cabin heat lever actuated normally. The left and right brake master cylinders remained secured to their respective mounts. When actuated by hand, the right brake pedal needed minimal input to actuate the brake, however, the left brake pedal needed a significant amount of movement to actuate the brake. Both the left and right main landing gear wheels rotated freely without restriction, moved unrestrictedly. The hydraulic brake-reservoir cap was removed, and residual a minimal amounts of hydraulic fluid was observed within the reservoir cavity. The vented cap was free of debris and no restrictions were noted. A heat gun was utilized to heat both the left and right master cylinders. After about 25 minutes of the application of heat to the right master cylinder, it was noted that the brake engaged, resulting in restricted movement of the right main wheel by hand. The application of heat to the left master cylinder resulted in no change. Evidence indicated that the hydraulic fluid drained from the reservoir through the vent following the accident while the airplane was inverted.~~

The engine and all engine accessories remained secure to their respective its-mounts. ~~All engine accessories remained attached to their respective mounts.~~ All fuel lines remained attached and secure with no kinks or leaks noted. Throttle, mixture, and carburetor heat control continuity was established from the cockpit controls to the engine. The wooden propeller assembly remained attached to the crankshaft however, one of the propeller blades was separated at the propeller hub. Rotational continuity was established throughout the engine and valve train.

~~One of the two magnetos were equipped with an impulse coupling. When the engine crankshaft was rotated, spark was produced on the impulse coupling equipped magneto leads. The opposing magneto was not removed or examined.~~

~~The bottom four spark plugs were removed and examined. All four spark plugs exhibited gray deposits within the electrode area and exhibited normal operational signatures. The ignition harness was intact and undamaged.~~

The carburetor was equipped with a carburetor temperature probe. It was noted that one of the two wires ~~was were~~ separated from the crimped side of an electrical connector. The wire exhibited missing shielding at the end and no wire was observed within the electrical connector. The carburetor was removed and examined. The throttle and mixture levers moved from stop to stop by hand freely. The accelerator pump functioned normally when the throttle lever was actuated. The carburetor was disassembled, and the internal floats were intact and moved freely. The needle valve and seat were intact.

~~The induction system was intact and free of debris with the exception of dirt wedged within the air filter. The exhaust system was intact and undamaged. The seat tubing for cabin heat remained attached and undamaged.~~

The airplane was equipped with a Dynon FlightDEK-D180, and when power was applied to the airframe, it functioned, however it was found that the carburetor air inlet temperature display was inoperative.

No evidence of any preexisting mechanical malfunction that would have precluded normal operation of the engine was found. For further information, see the NTSB Airframe Examination Summary in the public docket for this accident.

The Federal Aviation Administration (FAA) published Special Airworthiness Information Bulletin (SAIB) CE-09-35 on June 30, 2009, regarding carburetor ice prevention. The conditions encountered in this accident (ambient temperature 41^o F, dew point 23^o F) were in the area of icing at glide and cruise power.