



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Alaska Region

Airframe and Engine Examination Summary

July 10, 2019
Nikishka, Alaska

A. Accident

NTSB Number: ANC19LA027

Location: Hope, Alaska

Date: June 11, 2019

Aircraft: Helio Courier H391B, N10CJ

Engine: Lycoming GO-435-C2B2-6

B. Background

On June 11, 2019, about 2230 Alaska daylight time, a Helio H-391B airplane, N10CJ, sustained substantial damage after a loss of control during a precautionary landing following a partial loss of engine power near Trapper Joe Lake about 15 miles southwest of Hope, Alaska. The private pilot and pilot rated passenger received no injuries. The airplane was registered to the pilot and operated under the provisions of Title 14 *Code of Federal Regulations* Part 91 as a visual flight rules personal flight. The local flight originated from McGahan Industrial Airpark (AK73), Nikishka, Alaska, about 2100.

During an interview with the National Transportation Safety Board investigator-in-charge, the pilot reported that he was flying in the left seat and his pilot rated passenger was seated in the right seat. While flying over the abandoned Alaska natural gas pipeline between Sterling, Alaska and Hope, the engine started to surge and run rough, and the engine manifold pressure decreased.

He cycled the throttle lever, increased the mixture lever to full rich, and turned on the electric fuel boost pump, but full power was not restored. The pilot rated passenger pulled the carburetor heat lever out (heat on) with no effect on engine performance. The pilot was able to maintain airplane altitude, but engine power was limited, so he searched for a landing location. He located an abandoned airstrip along the pipeline road and performed an approach to land to the north. The pilot stated that during the landing, the airplane drifted to the right, and touched down further than he intended. During the landing roll out, the right wing tip struck vegetation, the airplane veered rapidly to the right, and the empennage and left wing trailing edge impacted trees. Subsequently the airplane sustained substantial damage to the left aileron and left horizontal stabilizer. See figure 1. The pilot stated that there was a history of propeller rpm surging.



Figure 1. N10CJ at the accident scene.

C. Participants in Examination

NTSB Investigator-in-Charge (IIC)
FAA Aviation Safety Inspector
Mechanic

Noreen Price
David Longan
Lonnie Scott

Propeller Test
NTSB Aerospace Engineer
Hartzell Propeller

Gordon J. Hookey
Les Doud

D. Examination

Airframe Serial Number (S/N) 099
TTAF: 4,481 hrs
Engine Model and S/N: GO-435-C2B2-6, S/N L-3196-11BA
TTENG: 4,405 hrs
TSMOH: 915.5 hrs
Propeller model: Hartzell HC-82X2, hub 0-1B, SN C436
Last Annual Inspection: 12/21/2018

On July 2, 2019, the airplane was examined at the McGahan Industrial Airpark (AK73). The left and right stabilators and the left aileron sustained substantial damage. See figure 2.



Figure 2. The airplane before the examination exhibiting substantial damage to the stabilator and left aileron.

The remainder of the airplane and engine were intact. The fuel system, engine and propeller were examined. There was blue fuel in the gascolator that was clear of debris and smelled like avgas. A sample of drained fuel tested negative for water when tested with Sar-Gel paste. The fuel filter was clear of contamination. See figure 3.

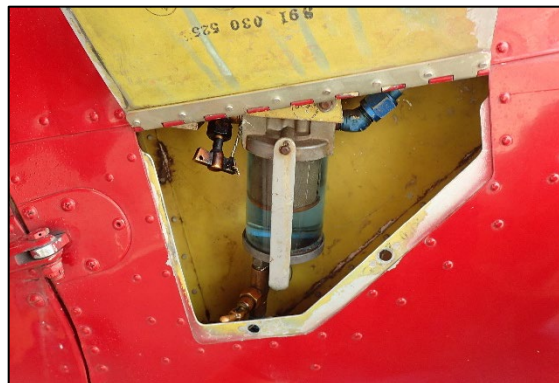


Figure 3. Gascolator with avgas present.

The fuel selector was in the on position and rotated through the on and off positions appropriately. All visible fuel lines to the gascolator and to the carburetor were intact and secure.

The engine throttle, mixture, and carburetor controls were moved from minimum to maximum in the cockpit with corresponding movement at the engine. The propeller control was moved with corresponding control rod movement to the governor.

Full flight control continuity was established.

The engine was attached at the mounts and the propeller was intact and attached to the engine. The propeller blades were secure in their mounts and rotated by hand within the hub. The start locks were retracted, which according to a Hartzell investigator, is normal for this model. See figures 4 and 5.



Figure 4. Lycoming GO-435-C2B2 left side of engine.



Figure 5. Propeller.

All accessories were secure at their attachment points. The ignition harness and ignitors were intact. There were no observed leaks and the induction and exhaust systems had no apparent breaks or abnormal wear. The carburetor (Bendix PS-5-BD) was secure and all fuel lines, air and control linkages attached.

E. Engine Run

The engine was started and operated by the owner. It started without hesitation and was warmed up at idle for 5 minutes. A magneto test was conducted and the rpm dropped appropriately. The propeller control was retarded and advanced 3 times with appropriate manifold pressure, rpm and oil changes. The rpm was increased to 3,400 for 15 seconds and the manifold pressure increased to 25 inches. The high power setting was not sustained due to concern for the airframe damage. The engine rpm increased and decreased appropriately with no surges. The engine shut down appropriately.

F. Propeller Governor Test

The propeller governor (Hartzell B3) was removed and sent to Hartzell for a functional bench test. See figure 6. An NTSB engineer supervised the test and a summary of the results is below.

The governor was tested on a Bauer propeller governor test stand in accordance with the Hartzell Governor Maintenance Manual 130B, 61-23-30.

The test stand was started with the governor installed and let run until the fluid temperature reached 115°F. The input speed was increased to 2725 rpm and the relief pressure tested within limits at 289 psi. The high rpm set screw was 2820 rpm, which was above the limit of 2725+/- 10 rpm. The input rpm was decreased to 1750 and the output flow capacity was 8.1 quarts/minute, and the internal leakage was 5.2 ounces/minute, which both were within limits. The low rpm set screw was within limits at 1720 rpm.



Figure 6. Propeller governor after removal.

G. Summary

There was no evidence observed at the examination of any preexisting engine, propeller or airframe discrepancies that would have precluded normal operation.