

Inspectors Statement

My Name is Cornelius J. Baker, I am an Aviation Safety Inspector assigned to the West Columbia Flight Standards District Office and I am writing this from notes taken during the witnessing of the inspection of N90KF engine

On May 11, 2020, I drove to [REDACTED] Westminster, SC to meet with the registered owner of N90KF and maintenance technician Dean Roberts. Mr. Lee was not the pilot when the engine quit, and Mr. Lee explained that his son and flight instructor Jason Garrick ([REDACTED]) were flying in the aircraft. I asked Mr. Lee if they had received fuel at the airport before the flight. Mr. Lee stated no we fueled it from my portable tank (see IMG_0146). I asked Mr. Lee if the tank had a fuel filter connected to the tank and asked for a sample of the fuel. Mr. Lee connected a car battery to alligator clips and pumped a sample into a clear glass jar. The fuel color was greenish yellow and had a faint smell of 100LL (see IMG_0145). A sample was taken from the aircraft where both wings feed a header tank (see IMG_0151). That sample appeared to be light blue in color and free of contamination (see IMG_0153). The fuel lines from both wings contained a fuel strainer and appeared clean. The left wing strainer was removed and disassembled and contained a small amount of debris (see IMG_0183). Nothing that would restrict fuel flow. Due to the aircraft being on a trailer the broken propeller was removed so the engine could be turned. One spark plug from each cylinder was removed and the engine rotated. The engine turned freely, and the alternator belt could be seen turning at the back of the engine. All the cylinders produced compression except the number one (1) cylinder, which appears to be due to impact damage. The engine driven fuel pump was removed, and the engine rotated and the plunger that actuates the pump moved up and down. A hose was placed on the engine driven pump intake side and submerged in fuel. The pump was actuated, and the fuel was picked up and exited from the outlet side of the pump. The fuel selector was located and found in the off position (see IMG_0150). Mr. Lee was asked about the selector being in the off position. Mr. Lee stated his son shut it off after the aircraft was on the ground. The line coming from the header tank to the selector was removed no fuel leaked out. Air was blown into the disconnected fitting which caused bubbles in the header tank. The technician applied suction to the line and received fuel. The line from the removed engine driven pump to the selector valve was blown into and the selector valve selected to the on position and air past through the selector valve. The carburetor was inspected and found dislodged from the intake system (see IMG_0190). The carburetor bowl was missing, the bowl retaining bail was pushed up and appears to have happened due to impact damage (see IMG_0191). The air filter was still attached to the air box. No carburetor heat source appears to be installed (see IMG_0191 and IMG_0192). There was no carb heat knob in the cockpit. The throttle was still connected to the carburetor but could not be moved in either direction. A review of the Rotec Operation Manual on page 56 states under the Bing Carburetor Operation, "An air filter and carburetor heat (both not supplied) should be incorporated in the air intake ducting". In addition, on page 57 under Fuel Types, the recommended fuel is AVGAS 100LL. High-Octane premium unleaded or leaded auto fuel is permissible where AVGAS is unavailable, however in these cases, carburetor adjustments may be necessary. The ignition system was inspected and both caps were

found dislodged from their retaining clips and the rotor buttons were missing (see IMG-0184 and IMG_0199). The ignition system could not be tested. After returning to the office, contact was made with the aircraft builder. He was asked if a carburetor heat source was ever installed on the aircraft. He stated that it didn't need it because it wasn't supplied.

Without any further disassembly the cause of the engine failure could not be determined. Fuel samples taken during this inspection will be sent to NTSB.

Cornelius J. Baker
Aviation Safety Inspector
SO-FSDO-13

Photos:



Figure 1: IMG_0145 Fuel Sample



Figure 2: IMG_0146 Portage Fuel Tank



Figure 3: IMG_0151 Header Tank



Figure 4: IMG_0153 Fuel Sample



Figure 5: IMG_0183 Fuel Strainer

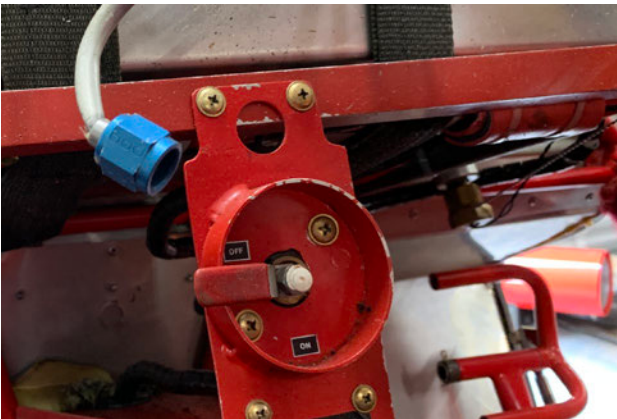


Figure 6: IMG_0150 Fuel Selector

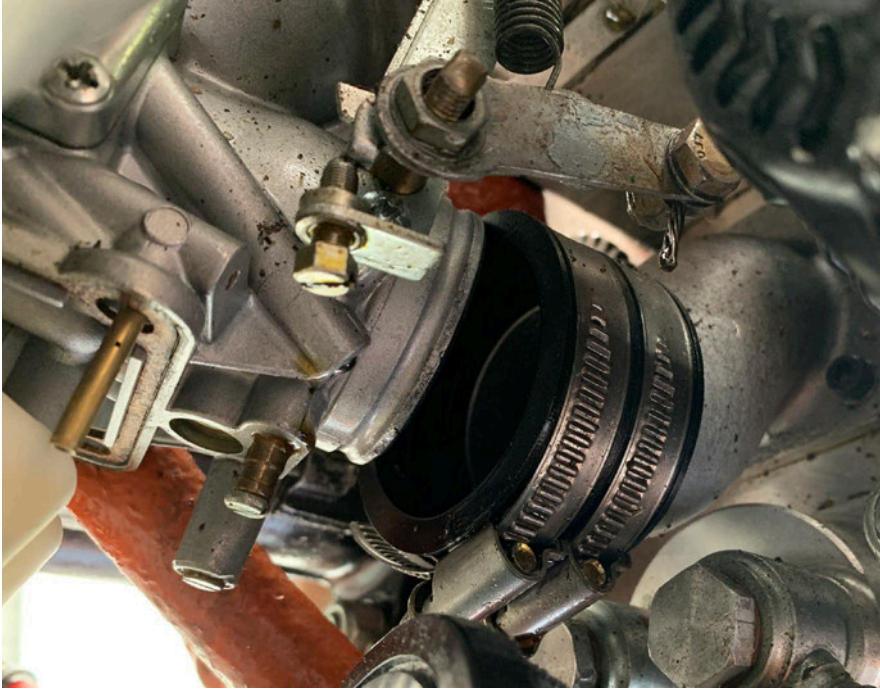


Figure 7: IMG_0190 Carburetor

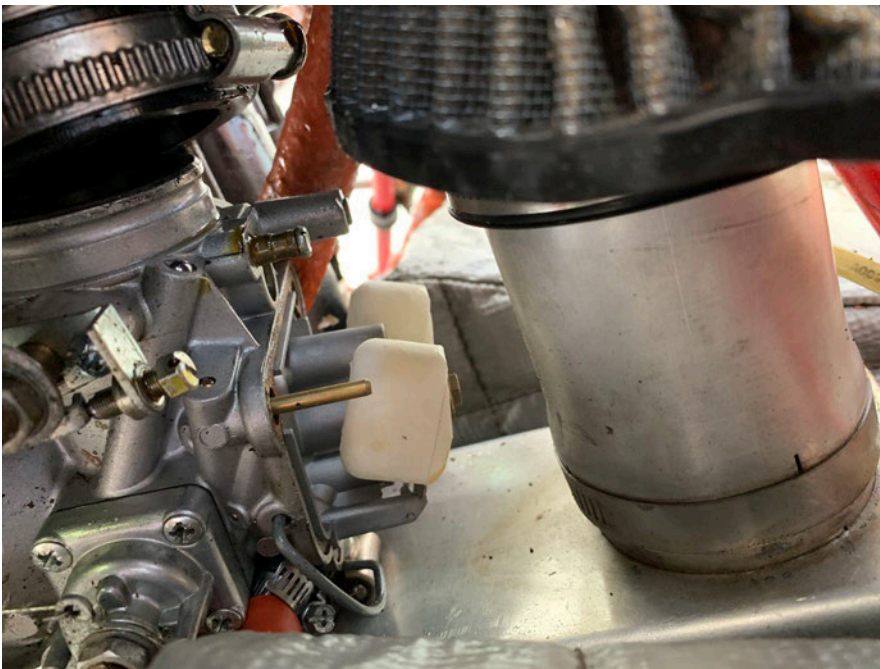


Figure 8: IMG_0191 Carburetor View 2



Figure 9: IMG_0192 Carburetor View 3

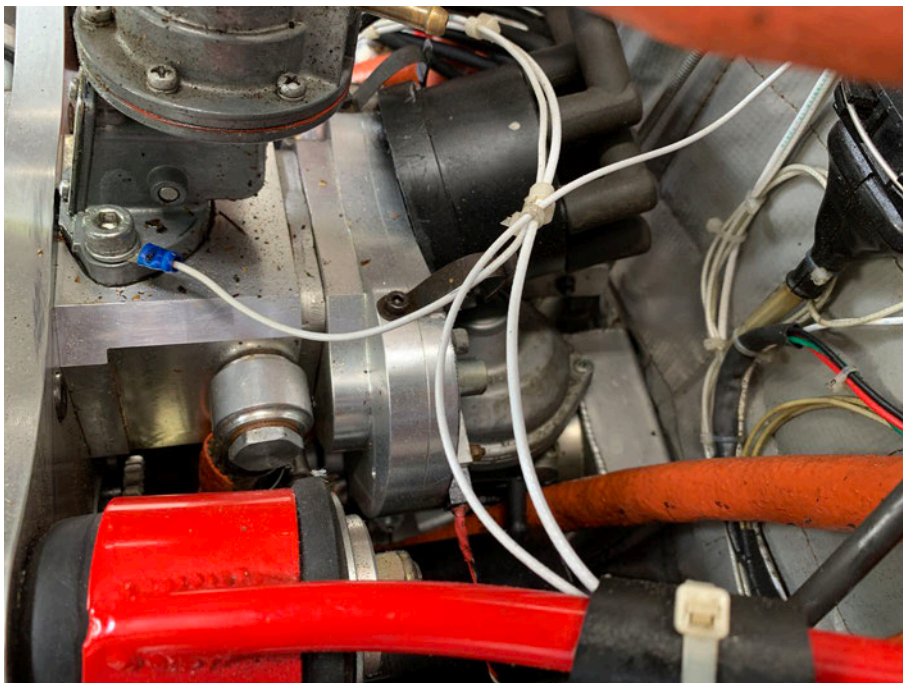


Figure 10: IMG-0184 Ignition System