



ENGINE EXAMINATION

NTSB ACCIDENT NUMBER: CEN20LA399

AIRCRAFT REGISTRATION: N94KJ
ACCIDENT LOCATION: Zeeland, MI

Investigative Team:

NTSB IIC: Michael Folkerts (Air Safety Investigator*)

NTSB Investigator Overseeing Examination: Adam Gerhardt (Air Safety Investigator)

Lycoming: Ryan Enders (Supervisor of Air Safety)

**Not on-site*

The NTSB and a party member with Lycoming Engines examined the engine on October 20, 2020 at AMF Aviation LLC., in Springfield, Tennessee.

Overview:

On September 19, 2020, about 0638 eastern daylight time, an amateur-built Vans RV9A airplane, N94KJ, was destroyed when it was involved in an accident at Ottawa Executive Airport (Z98), Zeeland, Michigan. The private pilot and passenger were fatally injured. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 personal flight.

Engine Examination:

The powerplant was a four-cylinder, air cooled, direct drive, horizontally opposed, fuel injected, naturally aspirated, internal combustion engine rated at 160hp @ 2700rpm. The "C" stamped at the end of the engine serial number notes a change to the engine model per Lycoming service instruction 1304.

As first viewed, the engine and portions of the aircraft firewall were separated from the aircraft and in a transport bag. The propeller remained attached to the engine. The engine was initially in the storage bag upside down. The engine was hoisted by a crane and the firewall and mounts were removed to facilitate the examination. The entirety of the engine displayed signs of thermal damage from the post impact fire.

Crankshaft rotation occurred when force was applied to the propeller by hand. Continuity of the valves was confirmed, and thumb compressions were observed on all four cylinders. The cylinders were borescoped and did not show any abnormalities. The rocker box covers showed signs of thermal damage and when removed, the thermal damage was evident on the valve springs and rocker arms of all cylinders.

The intake tubes for cylinders 1 and 3 remained attached with thermal damage. The intake tubes for cylinders 2 and 4 remained partially attached to the cylinders and displayed impact and post impact fire damage. The exhaust pipes on cylinders 1 and 3 remained attached to the cylinder heads and displayed thermal damage with minor impact damage. The exhaust pipes for cylinders 2 and 4 remained attached to the cylinder heads and were crushed. The muffler was impact separated from the engine and crushed.

The last known maintenance on the engine appears to have been on August 12, 2020 with a total time in service of 420.2 hours. The entry dated 11/8/2019 reflects performing the maintenance IAW Van's maintenance schedule, but the entry does not specifically say annual inspection.

No anomalies were observed that would have precluded normal operation.