

ENGINE TEARDOWN REPORT

INSPECTOR STATEMENT

Engine Model: Lycoming, O-360-C4P
Engine Serial Number: RL-34242-36A
Type Certification: E-286

Aircraft Make: Piper
Aircraft Model: PA-18-150
Aircraft Serial Number: 18-7509080
Registration Number: N476SM

Date and time of Examination: August 27, 2025. 0900EDT.

Requesting FAA Office:
FSDO GL-03---Beau Klingbeil, FAA IIC
NTSB---Josh Lindberg

Accident/Incident Number: CEN25LA322

Investigation Party:
Josh Lindberg---NTSB
Beau Klingbeil ----Des Plaines, IL FSDO GL-03
Tomash Bokotey---Cleveland, OH FSDO-GL-25
Stevan Vilimonovic---Cleveland, OH FSDO-GL-25

Personnel present during the examination:

FAA: Tomash Bokotey, Stevan Vilimonovic
A&P Mechanic performing the examination: [REDACTED]
Aircraft Owner: [REDACTED]
Air America A&P IA advisor: [REDACTED]

Description of Engine: Four-cylinder, direct drive, horizontally opposed, air-cooled engine. The cylinders are numbered from front to rear, odd numbers on the right. The direction of rotation of the crankshaft, viewed from the rear, is clockwise.

Initial Inspection:

The aircraft engine was in the hangar facility of Air America Aviation Services Millbury OH. The engine was attached to the fuselage. All accessories were attached as far as we were able to tell, apart from the propeller and the cowling assemblies.

Visual Documentation:

- Overall Engine Damage (cylinder damage, crankcase damage, pre-impact fire, etc.): None were visible.

- Condition of Engine Mounts: No damage observed.
- Condition of Engine Accessories: (what is separated, what is still attached, and are they 100% secure to their mount?) No abnormalities.
- Security of all fuel/oil lines: No abnormalities.
- Verification of Throttle/Mixture/Carb heat/Propeller Governor control positions on the engine and continuity to the cockpit controls: Good operation stop to stop.
- Quantity of engine oil level: 6.5 quarts noted.

Engine Disassembly:

- All spark plug wires ignition leads disconnected (top and bottom). No abnormalities noted.
- Spark plugs removed and placed in spark plug tray for identification. During removal of spark plugs for number 2 cylinder, observed the bottom spark plug loose. Once the bottom spark plug was removed, observed the presence of oil on the electrode and heavy damage to the electrode and surrounding surface. Observed similar damage to the top spark plug for the number 2 cylinder.
- Spark plug electrodes removed and inspected for mechanical damage: No abnormalities noted.
- All cylinder rocker box covers removed in sequence as follows #2, #4, #1, #3.

Internal Continuity:

- All cylinders were examined with the borescope. Borescope was performed in a sequence as follows, cylinders #1, #3, #4, #2. Noted number 2 cylinder had major damage to the piston dome.
- Crankshaft was rotated in the direction of normal rotation by hand using a hand tool. During rotation of crankshaft, cam operation was normal, valve operation movement was also normal. Magneto impulse was normal, and piston travel was normal for all four cylinders.
- "THUMB" compression and suction was performed on all cylinders by placing thumb lightly over the top sparkplug hole and rotating the crankshaft through by hand. Observed no compression in #2 cylinder.

Induction / Exhaust System:

- Documented the exhaust system for overall condition, damage. Observed oil around the thermal sensor probe on the exhaust pipe for cylinder #2. Removed exhaust thermal sensors in sequence as follows. Probes #2, #4, #1, #3.
- The exhaust pipe for left and right-side cylinders was removed. No damage noted. Observed oil left side of engine, inside the exhaust muffler around and on the bottom of baffling. Very little to no oil observed on the right side of oil muffler. Observed small amounts of debris in the intake pipe of the #2 cylinder.

Cylinder #2 removal:

#2 Cylinder housing P/N: AEL65102, S/N 12.0 N4

The cylinder assembly was removed and disassembled. Observed heavy damage to the piston upper surface and the internal damage to the cylinder housing as seen in the photos. Noted that the bell of the exhaust valve was missing/broken off the valve shaft and caused heavy damage to the inner surface of the cylinder housing and the piston. No damage was observed on intake valve, valve springs, push rods and shroud tubes, valve rockers and other cylinder subcomponents.

Added Information/Other:

Observed the carburetor heat throttle cable disconnected after the mechanic pulled on the cable. The cotter pin was missing from the pin, but the cable was attached, and the washer was on the pin. Cable possibly removed during the preparation for shipment of the aircraft to Ohio. The engine oil filter was removed and cut open for inspection. Some sediments at the bottom of the filter were observed as seen in the photographs.

Tomash V. Bokotey
Aviation Safety Inspector, FSDO GL-25
September 3, 2025

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