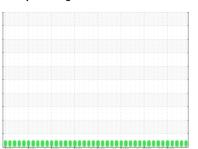


OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Grand River CAT 3 GRRM03BE

Component
Biogas Engine

CHEVRON HDAX 9500 GAS ENGINE OIL 40 (90 GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil

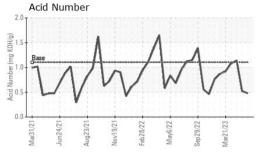
Fluid Condition

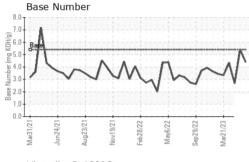
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

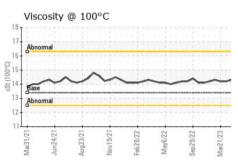
| OAMBLE INFORM | ATION | | 11 | | | |
|---|--|---|--|---|---|--|
| SAMPLE INFORM | IATION | method | limit/base | current | history1 | history2 |
| Sample Number | | Client Info | | WC0724874 | WC0724846 | WC0724840 |
| Sample Date | | Client Info | | 30 Jan 2024 | 10 Aug 2023 | 06 Jun 2023 |
| Machine Age | hrs | Client Info | | 62932 | 62509 | 62289 |
| Oil Age | hrs | Client Info | | 614 | 197 | 1395 |
| Oil Changed | | Client Info | | Not Changd | Not Changd | Changed |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |
| CONTAMINATION | J | method | limit/base | current | history1 | history2 |
| Fuel | | WC Method | >4.0 | <1.0 | <1.0 | <1.0 |
| Water | | WC Method | >0.1 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| WEAR METALS | | method | limit/base | current | history1 | history2 |
| Iron | ppm | ASTM D5185m | >15 | 0 | 1 | 2 |
| Chromium | ppm | ASTM D5185m | >4 | 0 | 0 | 0 |
| Nickel | ppm | ASTM D5185m | >2 | 0 | 0 | <1 |
| Titanium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185m | >5 | 0 | 0 | <1 |
| Aluminum | ppm | ASTM D5185m | >6 | <1 | 0 | 0 |
| Lead | ppm | ASTM D5185m | >9 | <1 | 0 | <1 |
| Copper | ppm | ASTM D5185m | >14 | <1 | 1 | 1 |
| Tin | ppm | | >4 | <1 | <1 | 1 |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| ADDITIVES | | method | limit/base | current | history1 | history2 |
| | | | | | | |
| Boron | ppm | ASTM D5185m | | 0 | 0 | <1 |
| Boron Barium | ppm ppm | ASTM D5185m ASTM D5185m | | 0 <1 | 0 | <1 |
| | | | | | | |
| Barium Molybdenum | ppm | ASTM D5185m | | <1 | 0 | 0 |
| Barium | ppm ppm | ASTM D5185m ASTM D5185m | | <1 <1 | 0 | 0 |
| Barium Molybdenum Manganese | ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m | | <1 <1 <1 | 0 0 <1 | 0 3 0 |
| Barium Molybdenum Manganese Magnesium | ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | | <1 <1 <1 12 | 0 0 <1 8 | 0 3 0 11 |
| Barium Molybdenum Manganese Magnesium Calcium | ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | | <1 <1 <1 12 1627 | 0 0 <1 8 1766 | 0 3 0 11 1687 |
| Barium Molybdenum Manganese Magnesium Calcium Phosphorus | ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | | <1 <1 <1 12 1627 260 | 0 0 <1 8 1766 272 | 0 3 0 11 1687 284 |
| Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc | ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | limit/base | <1 <1 <1 12 1627 260 324 | 0 0 <1 8 1766 272 325 | 0 3 0 11 1687 284 370 |
| Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur | ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | limit/base >181 | <1 <1 <1 12 1627 260 324 1659 | 0 0 <1 8 1766 272 325 2148 | 0 3 0 11 1687 284 370 2785 |
| Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS | ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | mmubacc | <1 <1 <1 12 1627 260 324 1659 current | 0 0 <1 8 1766 272 325 2148 history1 | 0 3 0 11 1687 284 370 2785 |
| Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon | ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m | mmubacc | <1 <1 <1 <1 12 1627 260 324 1659 current | 0 0 <1 8 1766 272 325 2148 history1 | 0 3 0 11 1687 284 370 2785 history2 |
| Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium | ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m | >181 | <1 <1 <1 <1 12 1627 260 324 1659 current 28 0 | 0 0 <1 8 1766 272 325 2148 history1 | 0 3 0 11 1687 284 370 2785 history2 53 |
| Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium | ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m | >181 | <1 <1 <1 <1 12 1627 260 324 1659 current 28 0 0 | 0 0 0 <1 8 1766 272 325 2148 history1 14 <1 | 0 3 0 11 1687 284 370 2785 history2 53 0 |
| Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED | ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m | >181 | <1 <1 <1 <1 12 1627 260 324 1659 current 28 0 0 current | 0 0 <1 8 1766 272 325 2148 history1 14 <1 0 | 0 3 0 11 1687 284 370 2785 history2 53 0 2 |
| Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | >181 >20 limit/base | <1 <1 <1 <1 12 1627 260 324 1659 current 28 0 0 current 0 | 0 0 0 <1 8 1766 272 325 2148 history1 14 <1 0 history1 | 0 3 0 11 1687 284 370 2785 history2 53 0 2 history2 0 |
| Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m method ASTM D5185m | >181 >20 limit/base >20 | <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 < | 0 0 0 <1 8 1766 272 325 2148 history1 14 <1 0 history1 | 0 3 0 11 1687 284 370 2785 history2 53 0 2 history2 0 5.5 |
| Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D76145 | >181 >20 limit/base >20 >30 | <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 < | 0 0 0 <1 8 1766 272 325 2148 history1 14 <1 0 history1 0 5.4 14.8 | 0 3 0 11 1687 284 370 2785 history2 53 0 2 history2 0 5.5 19.7 |
| Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m Method ASTM D5185m Method *ASTM D5185m *ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D5185m Method *ASTM D7844 *ASTM D7624 *ASTM D7415 Method | >181 >20 limit/base >20 >30 limit/base | <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 < | 0 0 0 <1 8 1766 272 325 2148 history1 14 <1 0 history1 0 5.4 14.8 | 0 3 0 11 1687 284 370 2785 history2 53 0 2 history2 0 5.5 19.7 history2 |
| Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA Oxidation | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method *ASTM D7844 *ASTM D7624 *ASTM D7415 Method *ASTM D7414 | >181 >20 limit/base >20 >30 limit/base >25 | <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 < | 0 0 0 1 8 1766 272 325 2148 history1 14 <1 0 history1 0 5.4 14.8 history1 8.5 | 0 3 0 11 1687 284 370 2785 history2 53 0 2 history2 0 5.5 19.7 history2 12.5 |



OIL ANALYSIS REPORT



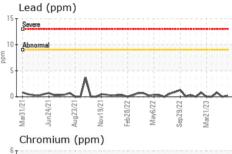


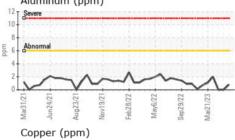


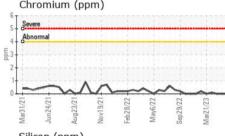
| VISUAL | | method | limit/base | current | history1 | history2 |
|-------------------------|--------|---------|------------|---------|----------|----------|
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | NONE | NONE | NONE |
| Silt | scalar | *Visual | NONE | NONE | NONE | NONE |
| Debris | scalar | *Visual | NONE | NONE | NONE | NONE |
| Sand/Dirt | scalar | *Visual | NONE | NONE | NONE | NONE |
| Appearance | scalar | *Visual | NORML | NORML | NORML | NORML |
| Odor | scalar | *Visual | NORML | NORML | NORML | NORML |
| Emulsified Water | scalar | *Visual | >0.1 | NEG | NEG | NEG |
| Free Water | scalar | *Visual | | NEG | NEG | NEG |

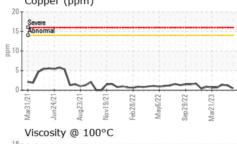
| FLUID PROPER | THES | method | | | riistory i | History2 |
|--------------|------|-----------|------|------|------------|----------|
| Visc @ 100°C | cSt | ASTM D445 | 13.4 | 13.5 | 13.3 | 14.3 |

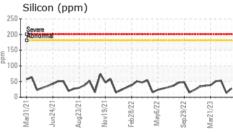
| Severe | | | | | 11111 | | |
|----------|----------|-------------|--------------------|----------|---------|----------|----------|
| Abnon | mal | | | | | | |
| - | | | | | | | |
| \ | _ | \ | $\checkmark \land$ | | ب | ^ | ~~ |
| Mar31/21 | Jun24/21 | Aug23/21 | Nov19/21 | -eb28/22 | May6/22 | Sep29/22 | Mar21/23 |
| | , | a∏ n (pp | | 큔 | M | Sep | Ma |

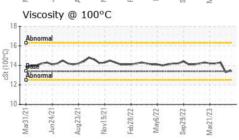


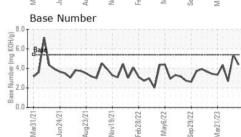
















Certificate L2367

Laboratory Sample No.

Lab Number **Unique Number** Test Package : MOB 2

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : WC0724874 : 06077049 : 10859140

To discuss this sample report, contact Customer Service at 1-800-237-1369.

Recieved : 01 Feb 2024 Diagnosed Diagnostician

: 02 Feb 2024 : Sean Felton

EDL NA Recips-Grand River

Grand River Powerstation, 8550 West Grand River Hwy Grand Ledge, MI US 48837

Contact: JAMES ALEXANDER

james.alexander@edlenergy.com T:

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

F: