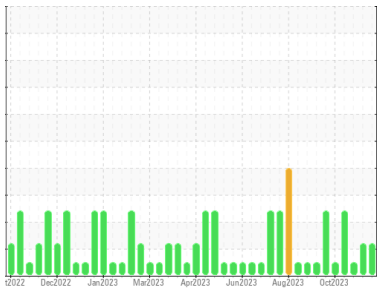
# OIL ANALYSIS REPORT

Sample Rating Trend



**DEGRADATION**

Machine Id
## Grand Blanc CAT 6 GBLM06BE
Component
**Biogas Engine**
Fluid
**CHEVRON HDAX 6500 LFG GAS ENGINE OIL (--- GAL)**

## DIAGNOSIS

**Recommendation**

We recommend that you drain the oil from the component if this has not already been done. Resample at the next service interval to monitor. ( Customer Sample Comment: 600hr Oil Sample )

**Wear**

All component wear rates are normal.

**Contamination**

There is no indication of any contamination in the oil.

**Fluid Condition**

The BN level is low. The AN level is acceptable for this fluid.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **WC0870032** | WC0870033 | WC0824978 |
| Sample Date | | Client Info | | **14 Nov 2023** | 11 Nov 2023 | 29 Oct 2023 |
| Machine Age | hrs | Client Info | | **89569** | 89394 | 89141 |
| Oil Age | hrs | Client Info | | **600** | 0 | 0 |
| Oil Changed | | Client Info | | **Not Changd** | N/A | N/A |
| Sample Status | | | | **ABNORMAL** | ABNORMAL | NORMAL |

| CONTAMINATION | | 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 | **<1** | 3 | <1 |
| Chromium | ppm | ASTM D5185m | >4 | **0** | <1 | 0 |
| Nickel | ppm | ASTM D5185m | >2 | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | **0** | <1 | 0 |
| Silver | ppm | ASTM D5185m | >5 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >6 | **2** | 3 | <1 |
| Lead | ppm | ASTM D5185m | >9 | **1** | 1 | 0 |
| Copper | ppm | ASTM D5185m | >6 | **<1** | 1 | <1 |
| Tin | ppm | ASTM D5185m | >4 | **2** | 1 | <1 |
| Vanadium | ppm | ASTM D5185m | | **0** | <1 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **0** | 0 | <1 |
| Barium | ppm | ASTM D5185m | | **0** | 6 | 0 |
| Molybdenum | ppm | ASTM D5185m | | **0** | 2 | 1 |
| Manganese | ppm | ASTM D5185m | | **<1** | 0 | <1 |
| Magnesium | ppm | ASTM D5185m | | **8** | 12 | 2 |
| Calcium | ppm | ASTM D5185m | | **1894** | 1866 | 1681 |
| Phosphorus | ppm | ASTM D5185m | | **284** | 325 | 231 |
| Zinc | ppm | ASTM D5185m | | **356** | 336 | 291 |
| Sulfur | ppm | ASTM D5185m | | **3352** | 3389 | 2569 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >181 | **109** | 98 | 54 |
| Sodium | ppm | ASTM D5185m | | **<1** | 0 | 1 |
| Potassium | ppm | ASTM D5185m | >20 | **2** | 1 | 1 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | | **0.1** | 0 | 0 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **5.8** | 5.5 | 5.5 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **26.4** | 25.3 | 21.2 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **17.6** | 16.3 | 12.5 |
| Acid Number (AN) | mg KOH/g | ASTM D8045 | 1.2 | **2.00** | 2.06 | 1.14 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 4.5 | ▲ **1.88** | ▲ 2.07 | 3.28 |

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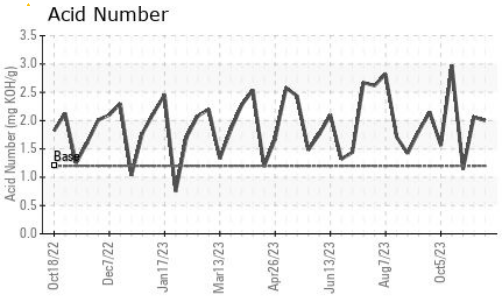
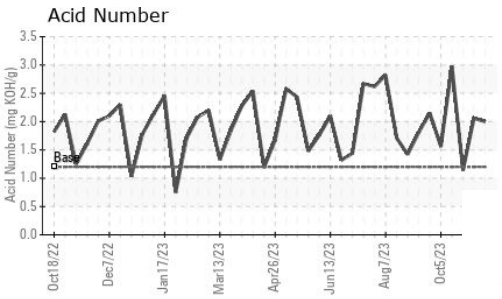
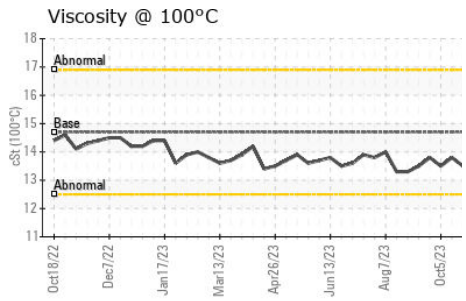


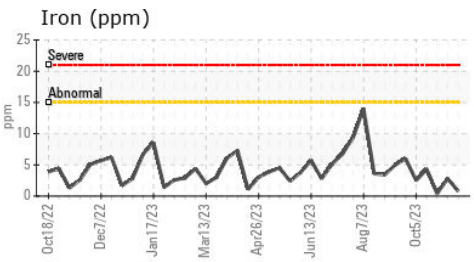



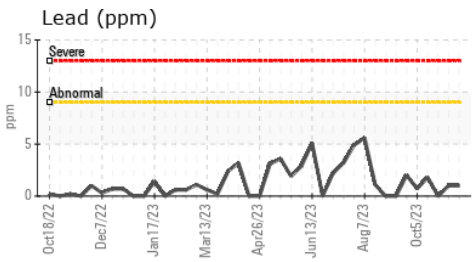



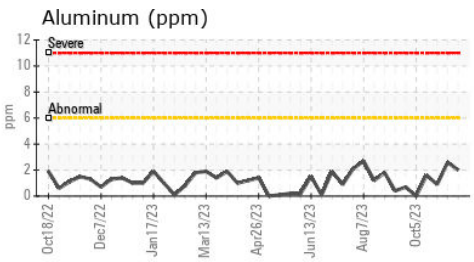

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| 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 |

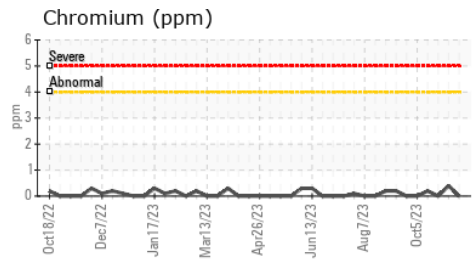
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 14.7 | **14.0** | 13.8 | 13.5 |

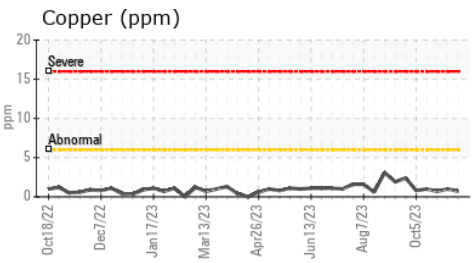
## GRAPHS

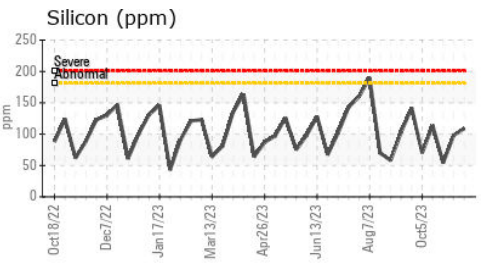


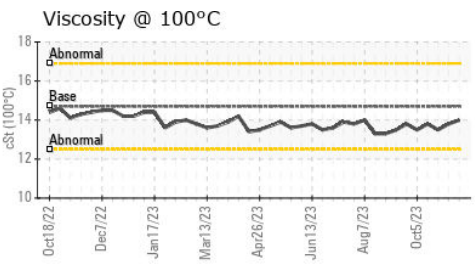



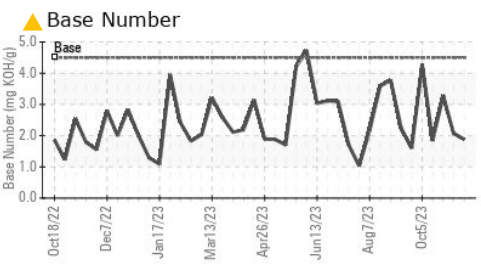




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : WC0870032 **Received** : 20 Nov 2023
**Lab Number** : 06012617 **Diagnosed** : 21 Nov 2023
**Unique Number** : 10751761 **Diagnostician** : Sean Felton
**Test Package** : MOB 2

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

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