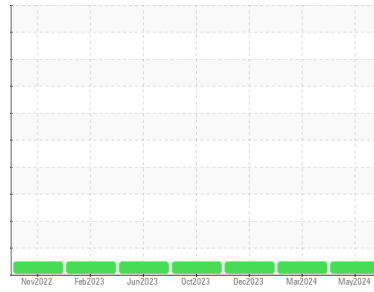




# OIL ANALYSIS REPORT

## Sample Rating Trend



**NORMAL**



Machine Id

**513019**

Component

**Diesel Engine**

Fluid

**DISEL ENGINE OIL SAE 40 (--- GAL)**

## DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor. Please specify the component make and model with your next sample. Please specify the brand, type, and viscosity of the oil on your next sample.

### Wear

Metal levels are typical for a new component breaking in.

### Contamination

Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. 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 condition of the oil is suitable for further service.

## SAMPLE INFORMATION

|               | method      | limit/base  | current            | history1    | history2    |
|---------------|-------------|-------------|--------------------|-------------|-------------|
| Sample Number | Client Info |             | <b>GFL0110940</b>  | GFL0110968  | GFL0096103  |
| Sample Date   | Client Info |             | <b>28 May 2024</b> | 12 Mar 2024 | 18 Dec 2023 |
| Machine Age   | hrs         | Client Info | <b>4369</b>        | 3742        | 3141        |
| Oil Age       | hrs         | Client Info | <b>627</b>         | 601         | 618         |
| Oil Changed   | Client Info |             | <b>Changed</b>     | Changed     | Changed     |
| Sample Status |             |             | <b>NORMAL</b>      | NORMAL      | NORMAL      |

## CONTAMINATION

|        | method    | limit/base | current        | history1 | history2 |
|--------|-----------|------------|----------------|----------|----------|
| Fuel   | WC Method | >5         | <b>&lt;1.0</b> | <1.0     | <1.0     |
| Water  | WC Method | >0.2       | <b>NEG</b>     | NEG      | NEG      |
| Glycol | WC Method |            | <b>NEG</b>     | NEG      | NEG      |

## WEAR METALS

|          | method | limit/base       | current      | history1 | history2 |
|----------|--------|------------------|--------------|----------|----------|
| Iron     | ppm    | ASTM D5185m >100 | <b>21</b>    | 15       | 19       |
| Chromium | ppm    | ASTM D5185m >20  | <b>&lt;1</b> | <1       | <1       |
| Nickel   | ppm    | ASTM D5185m >4   | <b>&lt;1</b> | 0        | <1       |
| Titanium | ppm    | ASTM D5185m      | <b>7</b>     | 13       | 12       |
| Silver   | ppm    | ASTM D5185m >3   | <b>&lt;1</b> | 0        | 0        |
| Aluminum | ppm    | ASTM D5185m >20  | <b>7</b>     | 7        | 9        |
| Lead     | ppm    | ASTM D5185m >40  | <b>1</b>     | 0        | <1       |
| Copper   | ppm    | ASTM D5185m >330 | <b>1</b>     | 1        | <1       |
| Tin      | ppm    | ASTM D5185m >15  | <b>&lt;1</b> | <1       | 1        |
| Vanadium | ppm    | ASTM D5185m      | <b>&lt;1</b> | 0        | <1       |
| Cadmium  | ppm    | ASTM D5185m      | <b>0</b>     | 0        | <1       |

## ADDITIVES

|            | method | limit/base       | current      | history1 | history2 |
|------------|--------|------------------|--------------|----------|----------|
| Boron      | ppm    | ASTM D5185m 250  | <b>188</b>   | 86       | 100      |
| Barium     | ppm    | ASTM D5185m 10   | <b>&lt;1</b> | 0        | 0        |
| Molybdenum | ppm    | ASTM D5185m 100  | <b>72</b>    | 48       | 54       |
| Manganese  | ppm    | ASTM D5185m      | <b>&lt;1</b> | <1       | <1       |
| Magnesium  | ppm    | ASTM D5185m 450  | <b>583</b>   | 690      | 711      |
| Calcium    | ppm    | ASTM D5185m 3000 | <b>1498</b>  | 1430     | 1527     |
| Phosphorus | ppm    | ASTM D5185m 1150 | <b>1049</b>  | 718      | 803      |
| Zinc       | ppm    | ASTM D5185m 1350 | <b>1143</b>  | 803      | 931      |
| Sulfur     | ppm    | ASTM D5185m 4250 | <b>3608</b>  | 3022     | 3266     |

## CONTAMINANTS

|           | method | limit/base       | current   | history1 | history2 |
|-----------|--------|------------------|-----------|----------|----------|
| Silicon   | ppm    | ASTM D5185m >25  | <b>8</b>  | 6        | 7        |
| Sodium    | ppm    | ASTM D5185m >216 | <b>4</b>  | 6        | 5        |
| Potassium | ppm    | ASTM D5185m >20  | <b>13</b> | 19       | 23       |

## INFRA-RED

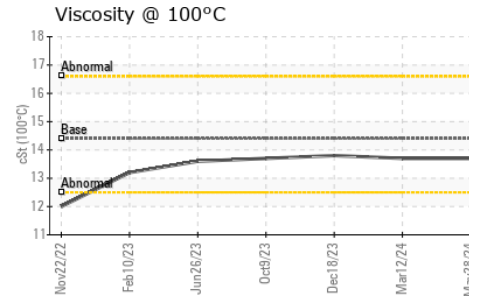
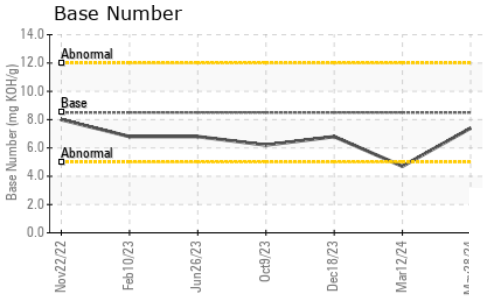
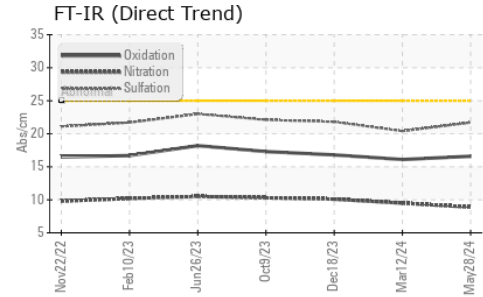
|           | method   | limit/base      | current     | history1 | history2 |
|-----------|----------|-----------------|-------------|----------|----------|
| Soot %    | %        | *ASTM D7844 >3  | <b>0.7</b>  | 0.6      | 0.7      |
| Nitration | Abs/cm   | *ASTM D7624 >20 | <b>8.9</b>  | 9.5      | 10.1     |
| Sulfation | Abs/.1mm | *ASTM D7415 >30 | <b>21.7</b> | 20.4     | 21.8     |

## FLUID DEGRADATION

|                  | method   | limit/base      | current     | history1 | history2 |
|------------------|----------|-----------------|-------------|----------|----------|
| Oxidation        | Abs/.1mm | *ASTM D7414 >25 | <b>16.6</b> | 16.1     | 16.8     |
| Base Number (BN) | mg KOH/g | ASTM D2896 8.5  | <b>7.4</b>  | 4.7      | 6.8      |



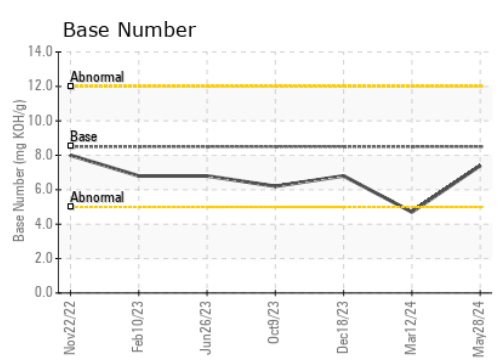
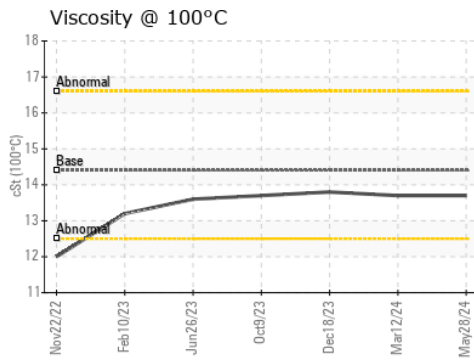
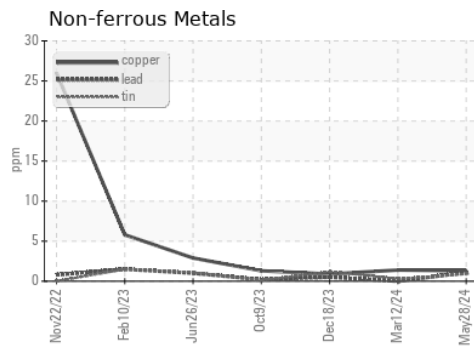
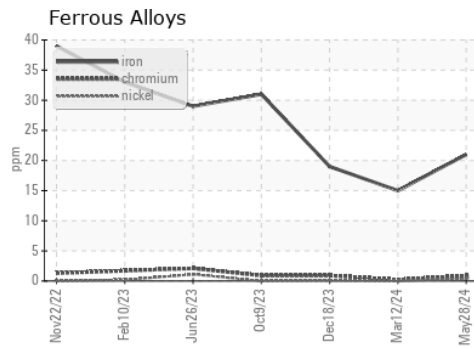
# OIL ANALYSIS REPORT



| PARAMETER        | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| White Metal      | scalar | *Visual    | NONE    | NONE     | NONE     |
| Yellow Metal     | scalar | *Visual    | NONE    | NONE     | NONE     |
| Precipitate      | scalar | *Visual    | NONE    | NONE     | NONE     |
| Silt             | scalar | *Visual    | NONE    | NONE     | NONE     |
| Debris           | scalar | *Visual    | NONE    | NONE     | NONE     |
| Sand/Dirt        | scalar | *Visual    | NONE    | NONE     | NONE     |
| Appearance       | scalar | *Visual    | NORML   | NORML    | NORML    |
| Odor             | scalar | *Visual    | NORML   | NORML    | NORML    |
| Emulsified Water | scalar | *Visual    | >0.2    | NEG      | NEG      |
| Free Water       | scalar | *Visual    |         | NEG      | NEG      |

| FLUID PROPERTIES | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| Visc @ 100°C     | cSt    | ASTM D445  | 14.4    | 13.7     | 13.7     |

### GRAPHS



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : GFL0110940      **Received** : 31 May 2024  
**Lab Number** : **06196312**      **Tested** : 03 Jun 2024  
**Unique Number** : 11058435      **Diagnosed** : 03 Jun 2024 - Wes Davis  
**Test Package** : FLEET

**GFL Environmental - 629 - Northern A1**  
 3947 US 131 N  
 Kalkaska, MI  
 US 49646-8428  
 Contact: MITCH HERSHBERGER

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)

T: (231)624-0848  
F: