



|                 |               |
|-----------------|---------------|
| WEAR            | <b>NORMAL</b> |
| CONTAMINATION   | <b>NORMAL</b> |
| FLUID CONDITION | <b>NORMAL</b> |



Machine Id  
**413033**  
Component  
**Diesel Engine**  
Fluid  
**DIESEL ENGINE OIL SAE 15W40 (--- LTR)**

**RECOMMENDATION**

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

| Test           | UOM | Method      | Limit/Abn | Current            | History1    | History2    |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number  |     | Client Info |           | <b>GFL0106098</b>  | GFL0078632  | GFL0082041  |
| Sample Date    |     | Client Info |           | <b>04 Jan 2024</b> | 16 Oct 2023 | 30 Jul 2023 |
| Machine Age    | hrs | Client Info |           | <b>3207</b>        | 2683        | 2111        |
| Oil Age        | hrs | Client Info |           | <b>600</b>         | 593         | 600         |
| Filter Age     | hrs | Client Info |           | <b>600</b>         | 593         | 0           |
| Oil Changed    |     | Client Info |           | <b>Changed</b>     | Changed     | N/A         |
| Filter Changed |     | Client Info |           | <b>Changed</b>     | Changed     | N/A         |
| Sample Status  |     |             |           | <b>NORMAL</b>      | NORMAL      | NORMAL      |

**WEAR**

All component wear rates are normal.

|              |        |             |      |              |      |      |
|--------------|--------|-------------|------|--------------|------|------|
| Iron         | ppm    | ASTM D5185m | >120 | <b>9</b>     | 10   | 12   |
| Chromium     | ppm    | ASTM D5185m | >20  | <b>&lt;1</b> | <1   | <1   |
| Nickel       | ppm    | ASTM D5185m | >5   | <b>2</b>     | 1    | <1   |
| Titanium     | ppm    | ASTM D5185m | >2   | <b>0</b>     | 0    | 0    |
| Silver       | ppm    | ASTM D5185m | >2   | <b>0</b>     | 0    | 0    |
| Aluminum     | ppm    | ASTM D5185m | >20  | <b>2</b>     | 3    | 4    |
| Lead         | ppm    | ASTM D5185m | >40  | <b>0</b>     | 0    | 0    |
| Copper       | ppm    | ASTM D5185m | >330 | <b>1</b>     | 5    | 9    |
| Tin          | ppm    | ASTM D5185m | >15  | <b>0</b>     | <1   | <1   |
| Vanadium     | ppm    | ASTM D5185m |      | <b>0</b>     | 0    | 0    |
| White Metal  | scalar | *Visual     | NONE | <b>NONE</b>  | NONE | NONE |
| Yellow Metal | scalar | *Visual     | NONE | <b>NONE</b>  | NONE | NONE |

**CONTAMINATION**

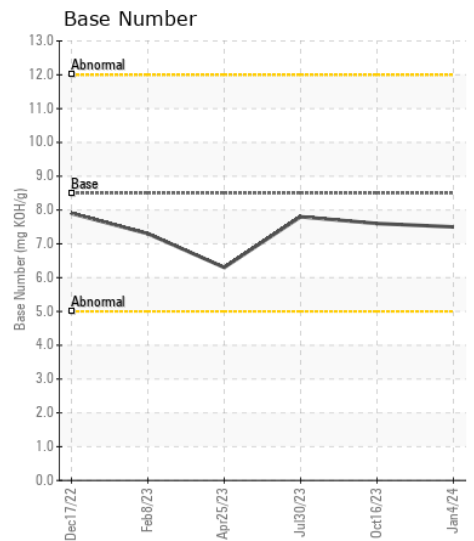
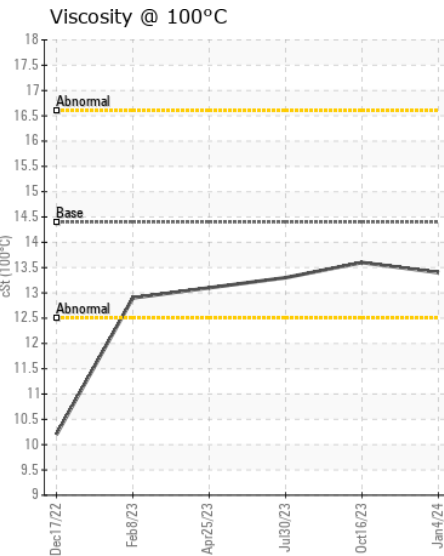
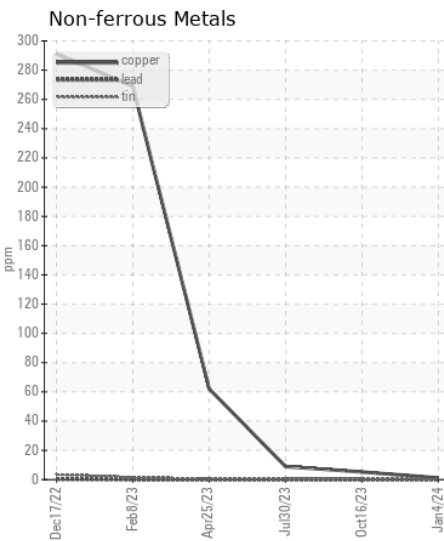
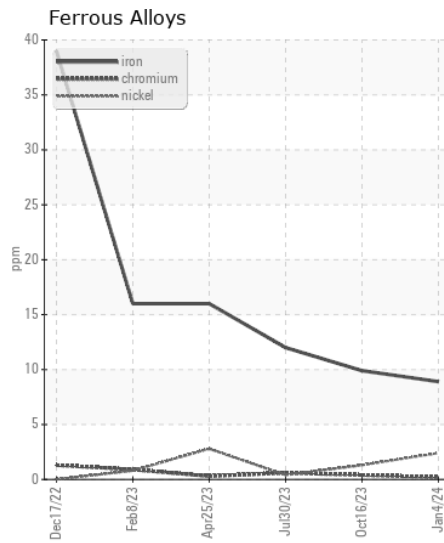
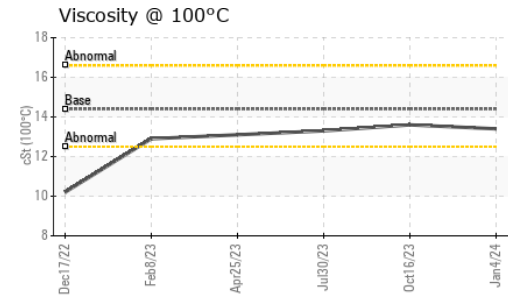
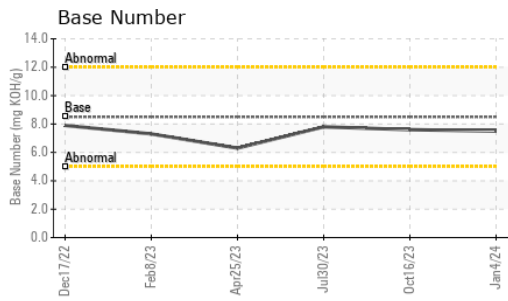
There is no indication of any contamination in the oil.

|                  |          |             |       |                |       |       |
|------------------|----------|-------------|-------|----------------|-------|-------|
| Silicon          | ppm      | ASTM D5185m | >25   | <b>3</b>       | 4     | 4     |
| Potassium        | ppm      | ASTM D5185m | >20   | <b>4</b>       | 8     | 6     |
| Fuel             |          | WC Method   | >3.0  | <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   |
| Soot %           | %        | *ASTM D7844 | >4    | <b>0.3</b>     | 0.3   | 0.4   |
| Nitration        | Abs/cm   | *ASTM D7624 | >20   | <b>8.1</b>     | 7.4   | 8.2   |
| Sulfation        | Abs/.1mm | *ASTM D7415 | >30   | <b>19.0</b>    | 18.7  | 19.4  |
| Silt             | scalar   | *Visual     | NONE  | <b>NONE</b>    | NONE  | NONE  |
| Debris           | scalar   | *Visual     | NONE  | <b>NONE</b>    | NONE  | NONE  |
| Sand/Dirt        | scalar   | *Visual     | NONE  | <b>NONE</b>    | NONE  | NONE  |
| Appearance       | scalar   | *Visual     | NORML | <b>NORML</b>   | NORML | NORML |
| Odor             | scalar   | *Visual     | NORML | <b>NORML</b>   | NORML | NORML |
| Emulsified Water | scalar   | *Visual     | >0.2  | <b>NEG</b>     | NEG   | NEG   |

**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.

|                  |          |             |      |             |      |      |
|------------------|----------|-------------|------|-------------|------|------|
| Sodium           | ppm      | ASTM D5185m | >158 | <b>3</b>    | 2    | 3    |
| Boron            | ppm      | ASTM D5185m | 250  | <b>3</b>    | 5    | 12   |
| Barium           | ppm      | ASTM D5185m | 10   | <b>0</b>    | 0    | 0    |
| Molybdenum       | ppm      | ASTM D5185m | 100  | <b>59</b>   | 64   | 73   |
| Manganese        | ppm      | ASTM D5185m |      | <b>0</b>    | 0    | <1   |
| Magnesium        | ppm      | ASTM D5185m | 450  | <b>931</b>  | 934  | 1038 |
| Calcium          | ppm      | ASTM D5185m | 3000 | <b>1042</b> | 1096 | 1228 |
| Phosphorus       | ppm      | ASTM D5185m | 1150 | <b>1024</b> | 1008 | 1138 |
| Zinc             | ppm      | ASTM D5185m | 1350 | <b>1188</b> | 1235 | 1359 |
| Sulfur           | ppm      | ASTM D5185m | 4250 | <b>3318</b> | 3210 | 3752 |
| Oxidation        | Abs/.1mm | *ASTM D7414 | >25  | <b>15.7</b> | 15.1 | 15.5 |
| Base Number (BN) | mg KOH/g | ASTM D2896  | 8.5  | <b>7.5</b>  | 7.6  | 7.8  |
| Visc @ 100°C     | cSt      | ASTM D445   | 14.4 | <b>13.4</b> | 13.6 | 13.3 |



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : GFL0106098 **Received** : 09 Jan 2024  
**Lab Number** : 06055740 **Diagnosed** : 10 Jan 2024  
**Unique Number** : 10821689 **Diagnostician** : Wes Davis  
**Test Package** : FLEET

**GFL Environmental - 152 - Jacksonville**  
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 US 32256  
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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)