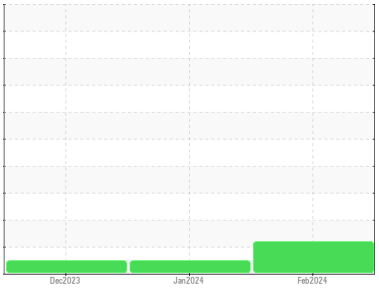
# OIL ANALYSIS REPORT

Sample Rating Trend




**DEGRADATION**

Machine Id
**934037**
Component
**Diesel Engine**
Fluid
**PETRO CANADA 15W40 (--- GAL)**

## DIAGNOSIS

**▲ Recommendation**
The oil is near the end of it`s useful service life, recommend schedule an oil change. 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 level is low.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **GFL0108254** | GFL0108318 | GFL0098210 |
| Sample Date | | Client Info | | **09 Feb 2024** | 16 Jan 2024 | 30 Dec 2023 |
| Machine Age | hrs | Client Info | | **538** | 344 | 250 |
| Oil Age | hrs | Client Info | | **538** | 344 | 250 |
| Oil Changed | | Client Info | | **Not Changd** | Not Changd | N/A |
| Sample Status | | | | **ABNORMAL** | NORMAL | NORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >3.0 | **<1.0** | <1.0 | <1.0 |
| Water | | WC Method | >0.2 | **NEG** | NEG | NEG |
| Glycol | | WC Method | | **NEG** | NEG | NEG |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >90 | **47** | 60 | 46 |
| Chromium | ppm | ASTM D5185m | >20 | **<1** | 1 | <1 |
| Nickel | ppm | ASTM D5185m | >2 | **2** | 1 | <1 |
| Titanium | ppm | ASTM D5185m | >2 | **<1** | 0 | <1 |
| Silver | ppm | ASTM D5185m | >2 | **<1** | <1 | <1 |
| Aluminum | ppm | ASTM D5185m | >20 | **5** | 6 | 5 |
| Lead | ppm | ASTM D5185m | >40 | **2** | <1 | 0 |
| Copper | ppm | ASTM D5185m | >330 | **16** | 17 | 16 |
| Tin | ppm | ASTM D5185m | >15 | **2** | 1 | 1 |
| Vanadium | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Cadmium | ppm | ASTM D5185m | | **<1** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **6** | 10 | 14 |
| Barium | ppm | ASTM D5185m | | **17** | 4 | 0 |
| Molybdenum | ppm | ASTM D5185m | | **50** | 56 | 49 |
| Manganese | ppm | ASTM D5185m | | **14** | 17 | 15 |
| Magnesium | ppm | ASTM D5185m | | **639** | 850 | 730 |
| Calcium | ppm | ASTM D5185m | | **1090** | 1126 | 1001 |
| Phosphorus | ppm | ASTM D5185m | | **690** | 790 | 717 |
| Zinc | ppm | ASTM D5185m | | **822** | 1008 | 854 |
| Sulfur | ppm | ASTM D5185m | | **2532** | 2592 | 2153 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **28** | 39 | 33 |
| Sodium | ppm | ASTM D5185m | | **1** | 6 | 4 |
| Potassium | ppm | ASTM D5185m | >20 | **18** | 30 | 15 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >6 | **0** | 0 | 0 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **11.7** | 12.2 | 10.9 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **23.2** | 21.4 | 20.3 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **20.8** | 19.4 | 18.7 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | | **▲ 3.4** | 5.0 | 5.6 |

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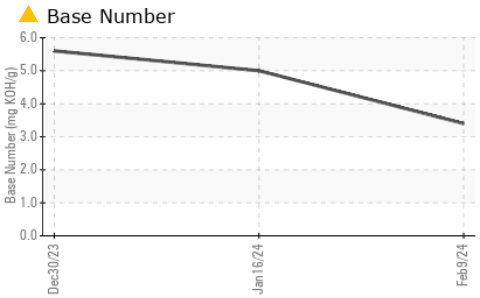
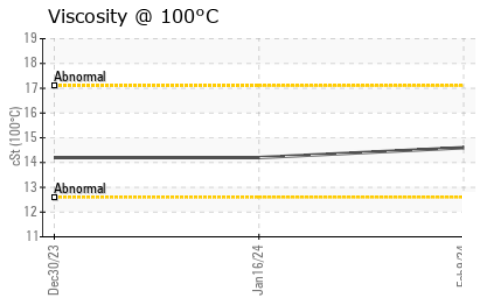
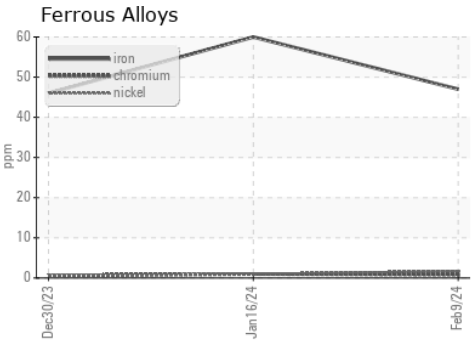


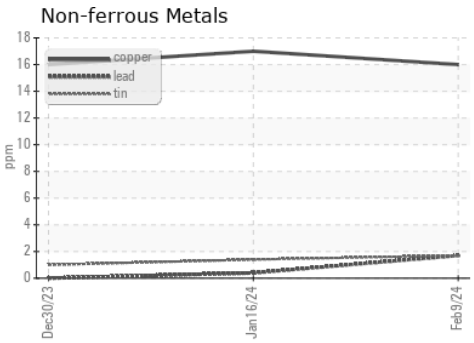



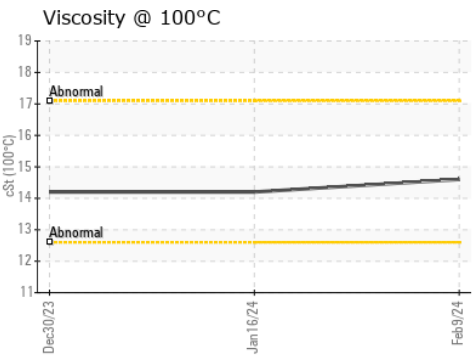

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| 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 | >0.2 | **NEG** | NEG | NEG |
| Free Water | scalar | *Visual | | **NEG** | NEG | NEG |

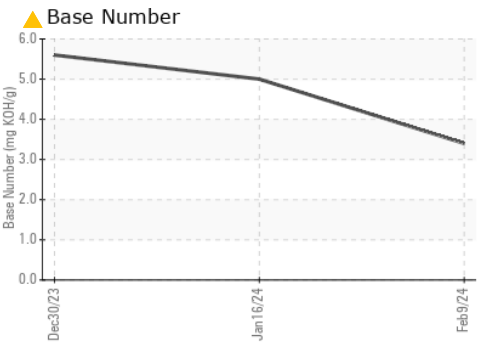
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | | **14.6** | 14.2 | 14.2 |

## GRAPHS




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0108254
**Lab Number** : 06085680
**Unique Number** : 10873125
**Test Package** : FLEET

**Received** : 12 Feb 2024
**Tested** : 12 Feb 2024
**Diagnosed** : 13 Feb 2024 - Sean Felton

**GFL Environmental - 652 - Fredericksburg Hauling**
10954 Houser Drive
Fredericksburg, VA
US 22408
Contact: WILLIAM MILO
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T:
F:

*To discuss this sample report, contact Customer Service at 1-800-237-1369.*
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*Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)*