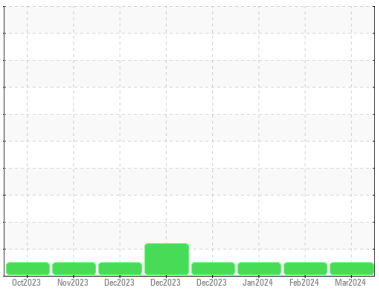
# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Machine Id
**834045**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON GEO LD 15W40 (--- 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 condition of the oil is suitable for further service.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **GFL0114174** | GFL0108065 | GFL0108130 |
| Sample Date | | Client Info | | **26 Mar 2024** | 17 Feb 2024 | 23 Jan 2024 |
| Machine Age | hrs | Client Info | | **1175** | 988 | 857 |
| Oil Age | hrs | Client Info | | **1175** | 857 | 0 |
| Oil Changed | | Client Info | | **Changed** | N/A | Not Changd |
| Sample Status | | | | **NORMAL** | 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 | >120 | **61** | 84 | 71 |
| Chromium | ppm | ASTM D5185m | >20 | **1** | 2 | <1 |
| Nickel | ppm | ASTM D5185m | >5 | **2** | 2 | 2 |
| Titanium | ppm | ASTM D5185m | >2 | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185m | >2 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | **5** | 8 | 6 |
| Lead | ppm | ASTM D5185m | >40 | **3** | 4 | 2 |
| Copper | ppm | ASTM D5185m | >330 | **12** | 19 | 17 |
| Tin | ppm | ASTM D5185m | >15 | **1** | 2 | 2 |
| Vanadium | ppm | ASTM D5185m | | **<1** | <1 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 50 | **14** | 3 | 4 |
| Barium | ppm | ASTM D5185m | 5 | **2** | 4 | 2 |
| Molybdenum | ppm | ASTM D5185m | 50 | **60** | 67 | 60 |
| Manganese | ppm | ASTM D5185m | 0 | **11** | 16 | 14 |
| Magnesium | ppm | ASTM D5185m | 560 | **839** | 940 | 815 |
| Calcium | ppm | ASTM D5185m | 1510 | **1559** | 1447 | 1247 |
| Phosphorus | ppm | ASTM D5185m | 780 | **763** | 843 | 765 |
| Zinc | ppm | ASTM D5185m | 870 | **1063** | 1052 | 907 |
| Sulfur | ppm | ASTM D5185m | 2040 | **2932** | 2315 | 2233 |

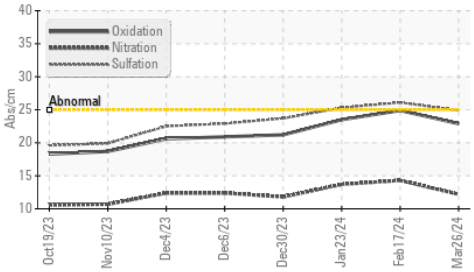
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **19** | 33 | 32 |
| Sodium | ppm | ASTM D5185m | | **5** | 9 | 6 |
| Potassium | ppm | ASTM D5185m | >20 | **5** | 8 | 6 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >4 | **0.1** | 0 | 0 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **12.2** | 14.3 | 13.7 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **24.9** | 26.1 | 25.3 |

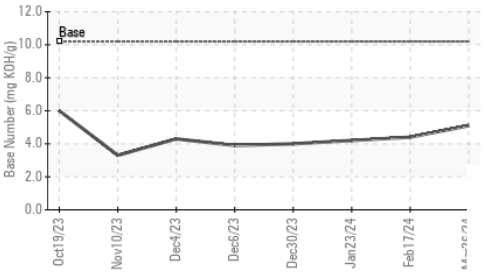
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **22.9** | 24.9 | 23.5 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 10.2 | **5.1** | 4.4 | 4.2 |

# OIL ANALYSIS REPORT

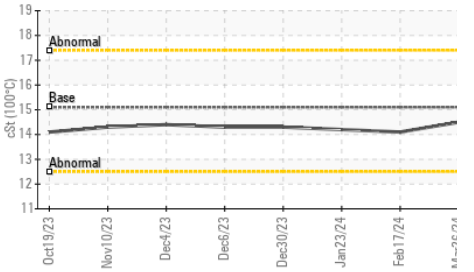
FT-IR (Direct Trend)




Base Number




Viscosity @ 100°C

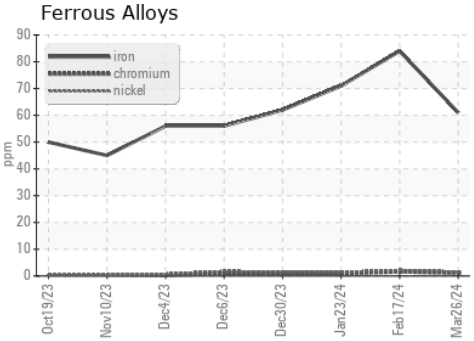



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

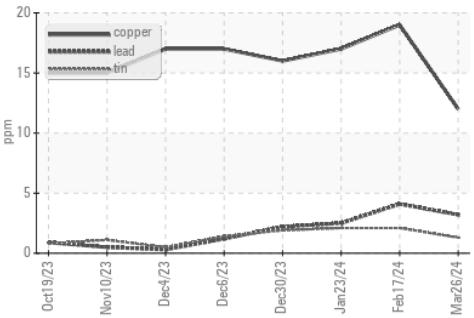
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.1 | **14.5** | 14.1 | 14.2 |

## GRAPHS

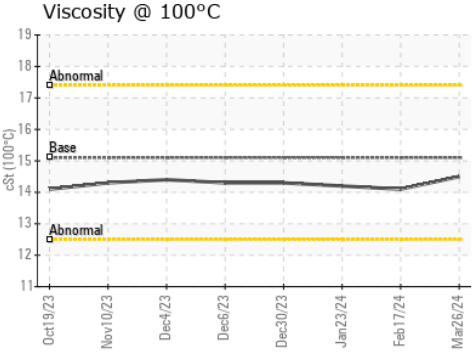
Ferrous Alloys



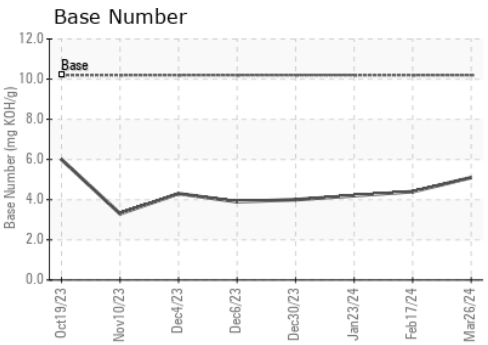

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0114174
**Lab Number** : 06139206
**Unique Number** : 10964014
**Test Package** : FLEET

**Received** : 04 Apr 2024
**Tested** : 05 Apr 2024
**Diagnosed** : 05 Apr 2024 - Wes Davis

**GFL Environmental - 837 - Harrison TS**
22820 S State Route 291
Harrisonville, MO
US 64701
Contact: JOHNNY PEREZ
johnny.perez@gflenv.com
T:
F:

*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)*

Report Id: GFL837 [WUSCAR] 06139206 (Generated: 04/05/2024 14:34:45) Rev: 1

Submitted By: JEREMY BROWN