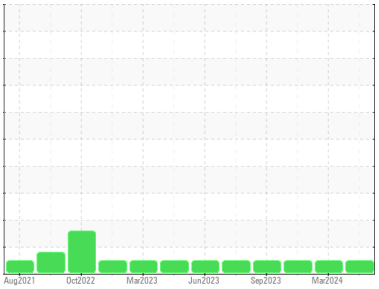
# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Machine Id
**826035-586**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (22 QTS)**

## 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 | | **GFL0110350** | GFL0110309 | GFL0102782 |
| Sample Date | | Client Info | | **16 Mar 2024** | 08 Mar 2024 | 27 Nov 2023 |
| Machine Age | hrs | Client Info | | **10804** | 10804 | 10804 |
| Oil Age | hrs | Client Info | | **590** | 317 | 317 |
| Oil Changed | | Client Info | | **Changed** | Not Changd | Not Changd |
| Sample Status | | | | **NORMAL** | NORMAL | NORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >5 | **<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 | >80 | **66** | 78 | 28 |
| Chromium | ppm | ASTM D5185m | >5 | **3** | 2 | 1 |
| Nickel | ppm | ASTM D5185m | >2 | **<1** | 0 | <1 |
| Titanium | ppm | ASTM D5185m | | **<1** | 0 | 0 |
| Silver | ppm | ASTM D5185m | >3 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >30 | **5** | 5 | 3 |
| Lead | ppm | ASTM D5185m | >30 | **9** | 9 | 1 |
| Copper | ppm | ASTM D5185m | >150 | **3** | 2 | <1 |
| Tin | ppm | ASTM D5185m | >5 | **1** | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | **<1** | 0 | <1 |
| Cadmium | ppm | ASTM D5185m | | **<1** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 0 | **8** | 0 | 9 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 60 | **74** | 73 | 69 |
| Manganese | ppm | ASTM D5185m | 0 | **<1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 1010 | **1112** | 1116 | 1016 |
| Calcium | ppm | ASTM D5185m | 1070 | **1363** | 1365 | 1196 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **1358** | 1225 | 1174 |
| Zinc | ppm | ASTM D5185m | 1270 | **1512** | 1527 | 1423 |
| Sulfur | ppm | ASTM D5185m | 2060 | **3504** | 3385 | 3231 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >20 | **8** | 7 | 6 |
| Sodium | ppm | ASTM D5185m | | **4** | 4 | 3 |
| Potassium | ppm | ASTM D5185m | >20 | **3** | <1 | 2 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.9** | 1.1 | 0.6 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **14.4** | 15.8 | 11.3 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **28.2** | 31.0 | 23.9 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **27.6** | 31.6 | 22.6 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **5.6** | 4.3 | 6.9 |

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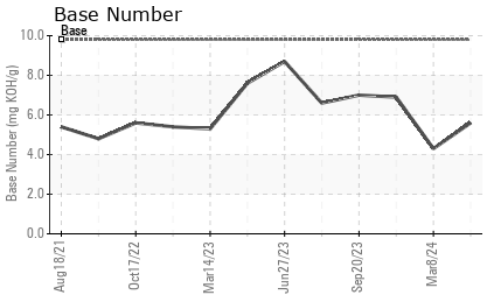
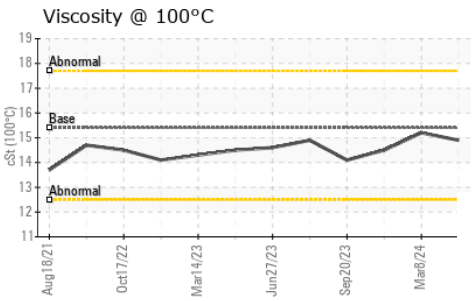


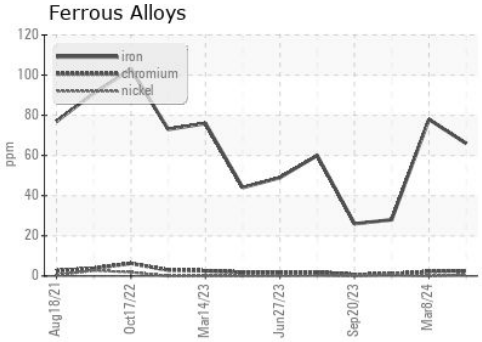




| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

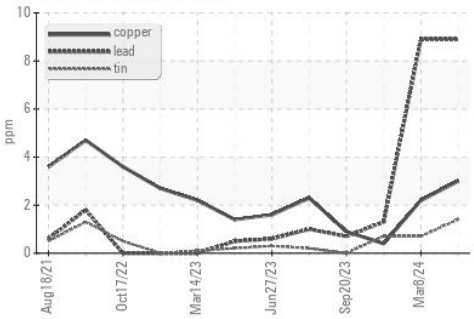
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | **14.9** | 15.2 | 14.5 |

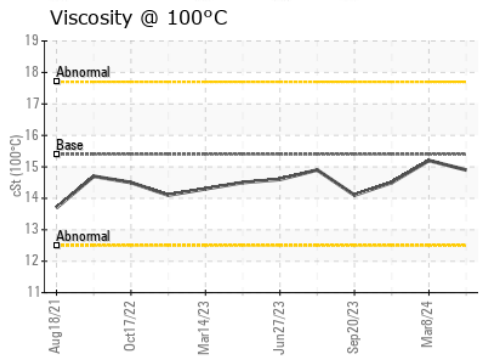
## GRAPHS

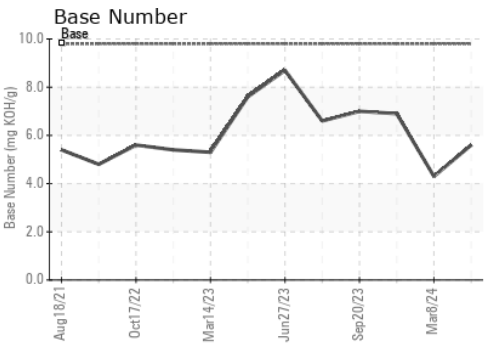
Ferrous Alloys




Non-ferrous Metals




**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0110350
**Lab Number** : 06125430
**Unique Number** : 10939581
**Test Package** : FLEET

**Received** : 21 Mar 2024
**Tested** : 22 Mar 2024
**Diagnosed** : 25 Mar 2024 - Don Baldridge

Certificate L2367

**GFL Environmental - 622 - Traverse City Hauling**
160 Hughes Dr
Traverse City, MI
US 49686
Contact: GARY BREWER
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)*