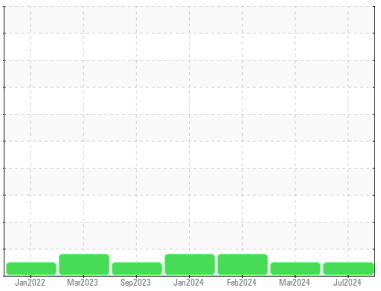
# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Machine Id
**211005-632125**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 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 | | **GFL0125184** | GFL0114441 | GFL0114467 |
| Sample Date | | Client Info | | **06 Jul 2024** | 29 Mar 2024 | 23 Feb 2024 |
| Machine Age | mls | Client Info | | **176957** | 4211 | 4034 |
| Oil Age | mls | Client Info | | **0** | 0 | 4034 |
| Oil Changed | | Client Info | | **Not Changd** | Changed | Changed |
| Sample Status | | | | **NORMAL** | NORMAL | ABNORMAL |

| 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 | >100 | **26** | 12 | 67 |
| Chromium | ppm | ASTM D5185m | >20 | **1** | <1 | 2 |
| Nickel | ppm | ASTM D5185m | >4 | **0** | 0 | <1 |
| Titanium | ppm | ASTM D5185m | | **0** | 0 | <1 |
| Silver | ppm | ASTM D5185m | >3 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | **2** | 5 | ▲ 33 |
| Lead | ppm | ASTM D5185m | >40 | **<1** | <1 | 0 |
| Copper | ppm | ASTM D5185m | >330 | **<1** | <1 | 2 |
| Tin | ppm | ASTM D5185m | >15 | **<1** | 0 | 0 |
| Vanadium | ppm | ASTM D5185m | | **0** | <1 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 0 | **5** | 1 | 0 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 60 | **58** | 53 | 62 |
| Manganese | ppm | ASTM D5185m | 0 | **0** | 0 | 1 |
| Magnesium | ppm | ASTM D5185m | 1010 | **920** | 979 | 1149 |
| Calcium | ppm | ASTM D5185m | 1070 | **1048** | 1115 | 1266 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **1058** | 912 | 1167 |
| Zinc | ppm | ASTM D5185m | 1270 | **1243** | 1312 | 1451 |
| Sulfur | ppm | ASTM D5185m | 2060 | **3425** | 3640 | 3206 |

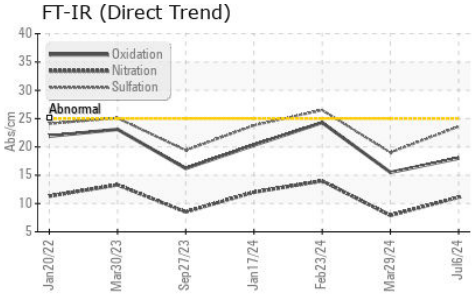
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **8** | 3 | 9 |
| Sodium | ppm | ASTM D5185m | | **5** | 0 | 2 |
| Potassium | ppm | ASTM D5185m | >20 | **<1** | 5 | 30 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **1.6** | 0.5 | 1.8 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **11.1** | 7.9 | 14.0 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **23.6** | 19.0 | 26.5 |

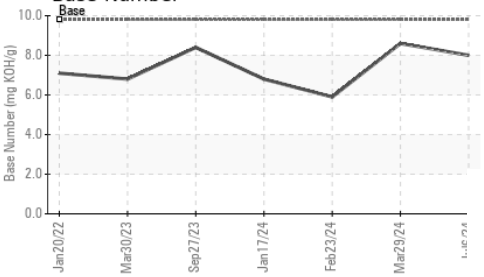
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **18.0** | 15.5 | 24.3 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **8.0** | 8.6 | 5.9 |

# OIL ANALYSIS REPORT

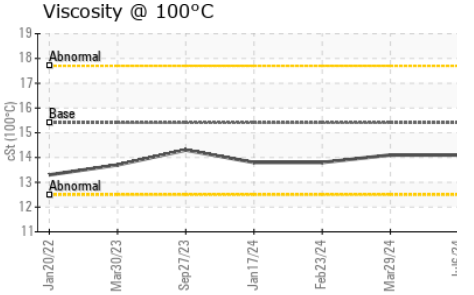
FT-IR (Direct Trend)




Base Number




Viscosity @ 100°C

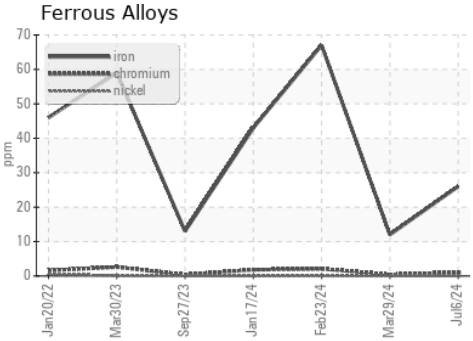



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

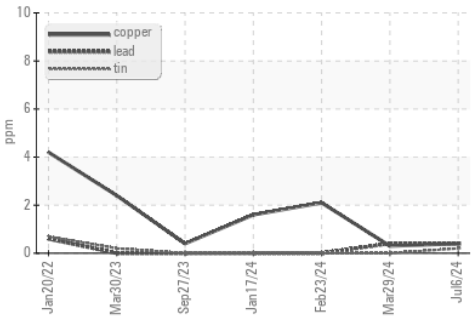
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | **14.1** | 14.1 | 13.8 |

## GRAPHS

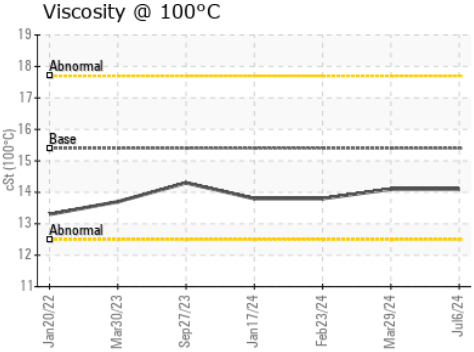
Ferrous Alloys



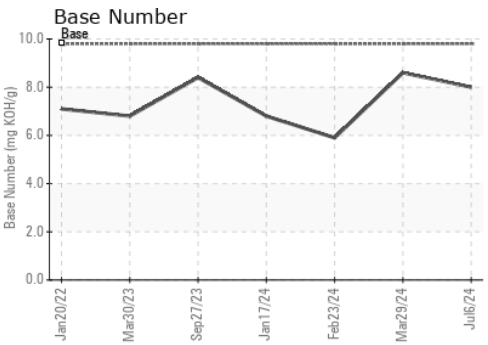

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0125184
**Lab Number** : 06239665
**Unique Number** : 11128499
**Test Package** : FLEET

**Received** : 17 Jul 2024
**Tested** : 18 Jul 2024
**Diagnosed** : 18 Jul 2024 - Wes Davis

*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)*

**GFL Environmental - 865 - East Mount Hauling**
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T:
F:

Report Id: GFL865 [WUSCAR] 06239665 (Generated: 07/18/2024 14:43:27) Rev: 1

Submitted By: TECHNICIAN ACCOUNT