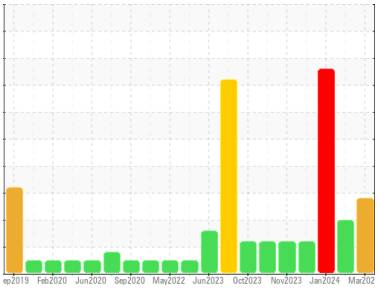
# OIL ANALYSIS REPORT

Sample Rating Trend



**DIRT**

Area
**(83J3TW)**
Machine Id
**229035-632119**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (--- GAL)**

## DIAGNOSIS

**Recommendation**
We advise that you check the fuel injection system. Resample at the next service interval to monitor.

**Wear**
All component wear rates are normal.

**Contamination**
There is a moderate amount of fuel present in the oil. Elemental level of silicon (Si) above normal.

**Fluid Condition**
Fuel is present in the oil and is lowering the viscosity. The BN result indicates that there is suitable alkalinity remaining in the oil.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **GFL0108052** | GFL0108026 | GFL0108172 |
| Sample Date | | Client Info | | **01 Mar 2024** | 13 Feb 2024 | 08 Jan 2024 |
| Machine Age | hrs | Client Info | | **10483** | 10346 | 10216 |
| Oil Age | hrs | Client Info | | **0** | 10216 | 0 |
| Oil Changed | | Client Info | | **Not Changd** | Not Changd | Changed |
| Sample Status | | | | **ABNORMAL** | ABNORMAL | SEVERE |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Water | | WC Method | >0.2 | **NEG** | NEG | NEG |
| Glycol | | WC Method | | **NEG** | 0.0 | ▲ 0.10 |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >100 | **29** | 14 | 16 |
| Chromium | ppm | ASTM D5185m | >20 | **<1** | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >4 | **0** | <1 | 0 |
| Titanium | ppm | ASTM D5185m | | **<1** | <1 | 0 |
| Silver | ppm | ASTM D5185m | >3 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | **4** | 3 | 2 |
| Lead | ppm | ASTM D5185m | >40 | **<1** | 0 | <1 |
| Copper | ppm | ASTM D5185m | >330 | **14** | 11 | <1 |
| Tin | ppm | ASTM D5185m | >15 | **1** | 1 | <1 |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 0 | **11** | 11 | 4 |
| Barium | ppm | ASTM D5185m | 0 | **13** | 13 | 0 |
| Molybdenum | ppm | ASTM D5185m | 60 | **48** | 48 | 76 |
| Manganese | ppm | ASTM D5185m | 0 | **4** | 3 | 0 |
| Magnesium | ppm | ASTM D5185m | 1010 | **753** | 740 | 1016 |
| Calcium | ppm | ASTM D5185m | 1070 | **1245** | 1212 | 1137 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **949** | 939 | 1090 |
| Zinc | ppm | ASTM D5185m | 1270 | **1120** | 1127 | 1299 |
| Sulfur | ppm | ASTM D5185m | 2060 | **3238** | 2858 | 2834 |

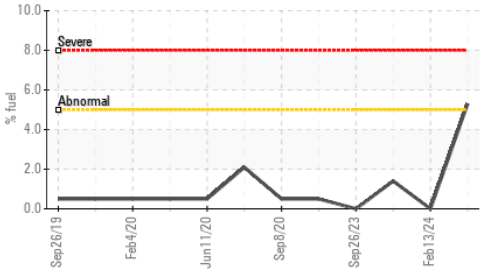
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | ▲ **37** | ▲ 33 | 7 |
| Sodium | ppm | ASTM D5185m | | **3** | 2 | ● 381 |
| Potassium | ppm | ASTM D5185m | >20 | **5** | 5 | 4 |
| Fuel | % | ASTM D3524 | >5 | ▲ **5.3** | <1.0 | 1.4 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.4** | 0.2 | 0.5 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **7.8** | 6.1 | 11.9 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **20.0** | 18.7 | 24.1 |

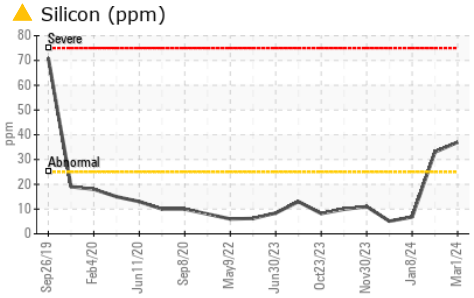
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **16.0** | 14.2 | 22.1 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **8.9** | 9.0 | 8.2 |

# OIL ANALYSIS REPORT

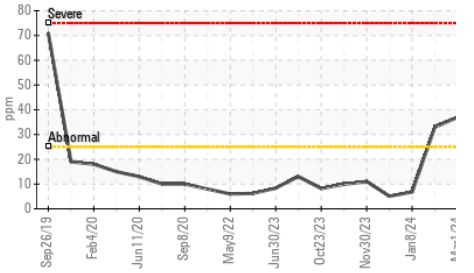
Fuel Dilution



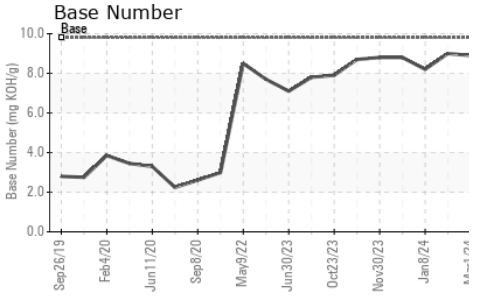

Silicon (ppm)




Silicon (ppm)




Base Number

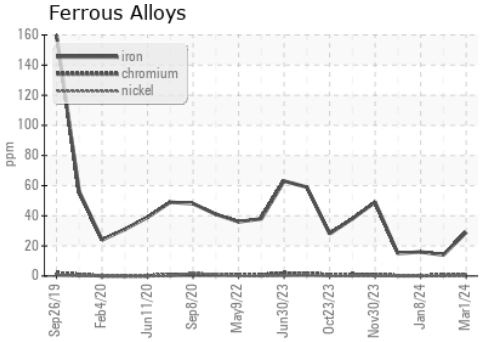



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | LIGHT | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

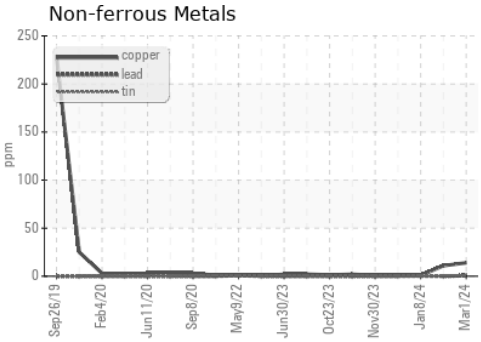
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | ▲ **11.0** | ▲ 11.6 | ▲ 11.6 |

## GRAPHS

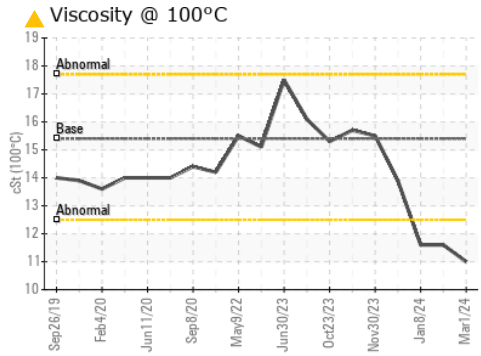
Ferrous Alloys



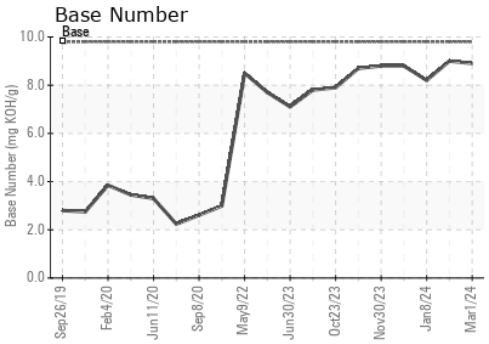

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0108052
**Lab Number** : 06117680
**Unique Number** : 10926513
**Test Package** : FLEET ( Additional Tests: FuelDilution, PercentFuel )

**Received** : 13 Mar 2024
**Tested** : 15 Mar 2024
**Diagnosed** : 15 Mar 2024 - Don Baldridge

*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)*

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F:

Report Id: GFL836 [WUSCAR] 06117680 (Generated: 03/15/2024 13:32:48) Rev: 1

Submitted By: JEREMY BROWN