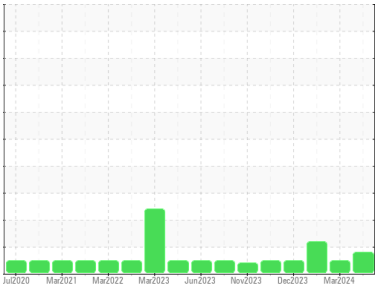
# OIL ANALYSIS REPORT

Machine Id
**923006-9922**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (--- LTR)**

Sample Rating Trend




**WEAR**

## DIAGNOSIS

**Recommendation**
No corrective action is recommended at this time. Resample at the next service interval to monitor.

**Wear**
The aluminum level is abnormal. All other component wear rates are normal.

**Contamination**
Fuel content negligible. 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 | | **GFL0112747** | GFL0112740 | GFL0112796 |
| Sample Date | | Client Info | | **13 Mar 2024** | 08 Mar 2024 | 29 Feb 2024 |
| Machine Age | hrs | Client Info | | **23737** | 23937 | 23864 |
| Oil Age | hrs | Client Info | | **0** | 0 | 0 |
| Oil Changed | | Client Info | | **Not Changd** | Changed | Not Changd |
| Sample Status | | | | **ABNORMAL** | NORMAL | ABNORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| 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 | **16** | 11 | 21 |
| Chromium | ppm | ASTM D5185m | >20 | **0** | <1 | 2 |
| Nickel | ppm | ASTM D5185m | >5 | **0** | <1 | 0 |
| Titanium | ppm | ASTM D5185m | >2 | **0** | 0 | <1 |
| Silver | ppm | ASTM D5185m | >2 | **0** | 0 | 2 |
| Aluminum | ppm | ASTM D5185m | >20 | ▲ **21** | 3 | 4 |
| Lead | ppm | ASTM D5185m | >40 | **3** | 0 | 0 |
| Copper | ppm | ASTM D5185m | >330 | **<1** | 1 | 7 |
| Tin | ppm | ASTM D5185m | >15 | **4** | <1 | 0 |
| Vanadium | ppm | ASTM D5185m | | **<1** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 0 | **1** | 4 | 54 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 60 | **63** | 58 | 71 |
| Manganese | ppm | ASTM D5185m | 0 | **<1** | <1 | 2 |
| Magnesium | ppm | ASTM D5185m | 1010 | **1077** | 941 | 161 |
| Calcium | ppm | ASTM D5185m | 1070 | **1212** | 1041 | 1969 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **1199** | 995 | 963 |
| Zinc | ppm | ASTM D5185m | 1270 | **1437** | 1227 | 1157 |
| Sulfur | ppm | ASTM D5185m | 2060 | **4219** | 3275 | 3286 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **8** | 5 | 9 |
| Sodium | ppm | ASTM D5185m | | **<1** | 4 | 0 |
| Potassium | ppm | ASTM D5185m | >20 | **<1** | 11 | 0 |
| Fuel | % | ASTM D3524 | >3.0 | **0.5** | <1.0 | ▲ 4.8 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >4 | **0.3** | 0.1 | 0.3 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **6.8** | 7.7 | 9.8 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **18.3** | 18.7 | 18.9 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **14.1** | 15.4 | 15.1 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **8.6** | 7.3 | 6.9 |

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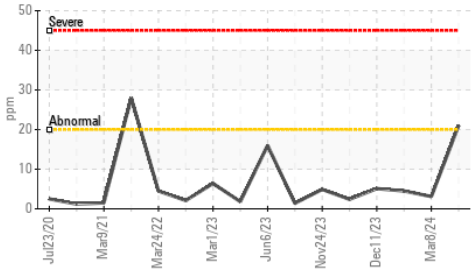
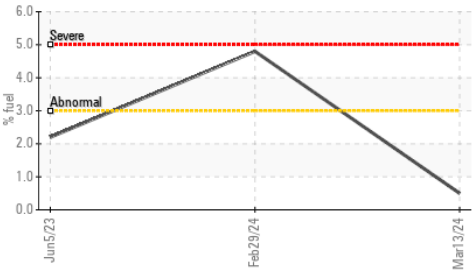
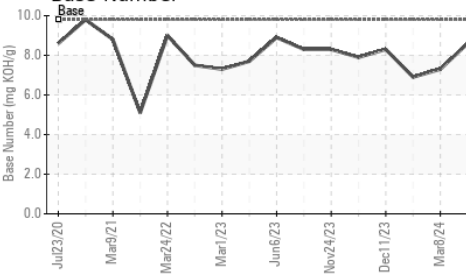
Aluminum (ppm)



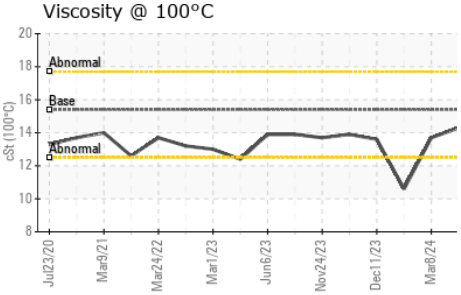

Fuel Dilution




Base Number




Viscosity @ 100°C

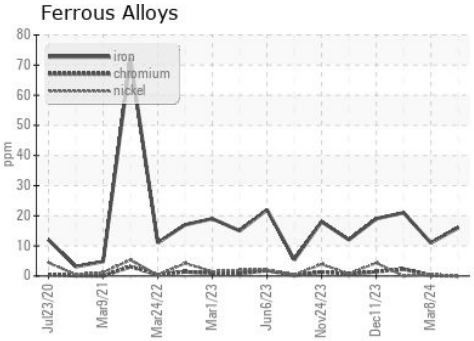



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

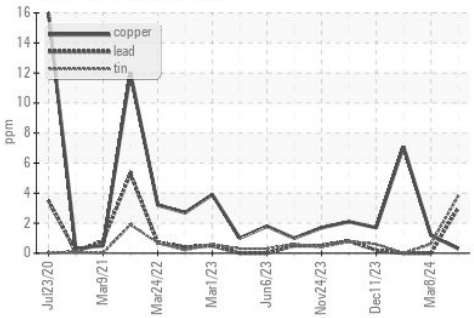
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | **14.3** | 13.7 | ▲ 10.6 |

## GRAPHS

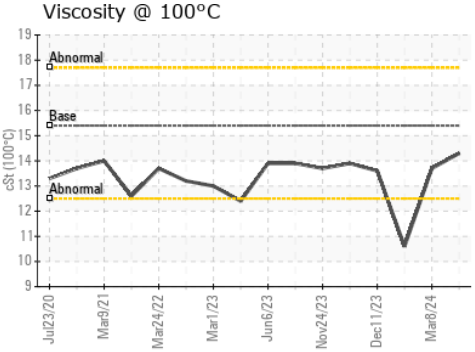
Ferrous Alloys



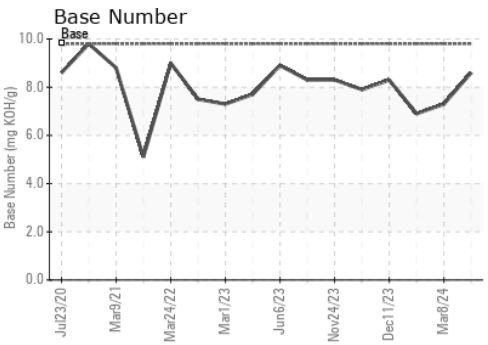

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0112747
**Lab Number** : 06123029
**Unique Number** : 10937180
**Test Package** : FLEET ( Additional Tests: FuelDilution, PercentFuel )

**Received** : 19 Mar 2024
**Tested** : 21 Mar 2024
**Diagnosed** : 21 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)*

**GFL Environmental - 654 - Richmond Hauling**
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Report Id: GFL654 [WUSCAR] 06123029 (Generated: 03/21/2024 17:00:37) Rev: 2

Submitted By: TECHNICIAN ACCOUNT