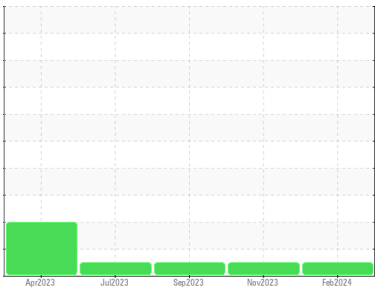
# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Machine Id
**413066**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (--- GAL)**

## DIAGNOSIS

**Recommendation**
Resample at the next service interval to monitor. ( Customer Sample Comment: Engine )

**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 acceptable for the time in service.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **GFL0105464** | GFL0094151 | GFL0089401 |
| Sample Date | | Client Info | | **08 Feb 2024** | 27 Nov 2023 | 11 Sep 2023 |
| Machine Age | mls | Client Info | | **53259** | 43661 | 32771 |
| Oil Age | mls | Client Info | | **53259** | 43661 | 32771 |
| Oil Changed | | Client Info | | **N/A** | N/A | Changed |
| 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 | **6** | <1 | 10 |
| Chromium | ppm | ASTM D5185m | >20 | **<1** | 0 | 1 |
| Nickel | ppm | ASTM D5185m | >5 | **<1** | 0 | <1 |
| Titanium | ppm | ASTM D5185m | >2 | **0** | 0 | <1 |
| Silver | ppm | ASTM D5185m | >2 | **<1** | 0 | <1 |
| Aluminum | ppm | ASTM D5185m | >20 | **2** | <1 | 1 |
| Lead | ppm | ASTM D5185m | >40 | **1** | <1 | 2 |
| Copper | ppm | ASTM D5185m | >330 | **5** | <1 | 37 |
| Tin | ppm | ASTM D5185m | >15 | **<1** | 0 | 2 |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | <1 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 0 | **2** | 0 | 0 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | 44 |
| Molybdenum | ppm | ASTM D5185m | 60 | **55** | 54 | 38 |
| Manganese | ppm | ASTM D5185m | 0 | **<1** | 0 | 2 |
| Magnesium | ppm | ASTM D5185m | 1010 | **9** | 8 | 39 |
| Calcium | ppm | ASTM D5185m | 1070 | **2437** | 2668 | 2088 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **1018** | 1242 | 913 |
| Zinc | ppm | ASTM D5185m | 1270 | **1276** | 1539 | 1122 |
| Sulfur | ppm | ASTM D5185m | 2060 | **2975** | 3807 | 2966 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **6** | 6 | 10 |
| Sodium | ppm | ASTM D5185m | | **2** | <1 | 3 |
| Potassium | ppm | ASTM D5185m | >20 | **6** | <1 | 7 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >4 | **0.2** | 0 | 0.2 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **8.3** | 4.4 | 8.0 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **19.9** | 14.2 | 20.6 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **12.0** | 7.9 | 13.0 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **3.7** | 7.8 | 5.5 |

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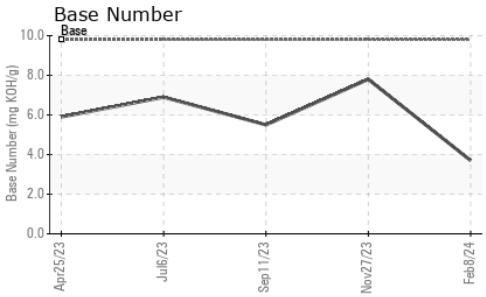
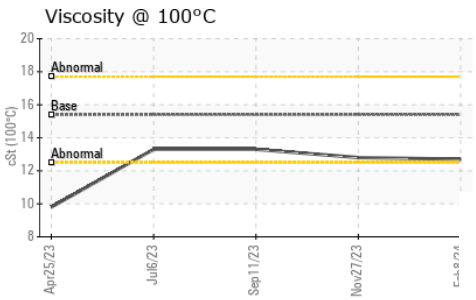
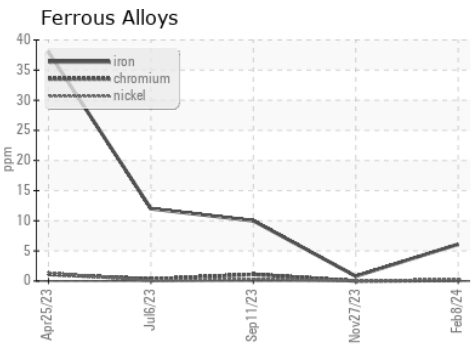


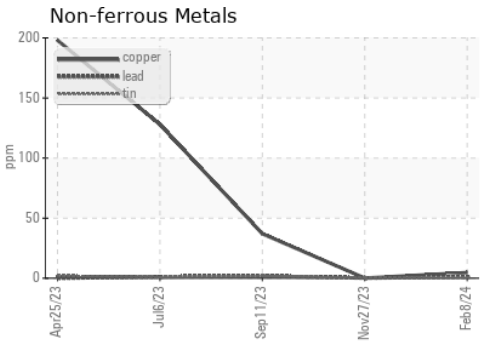



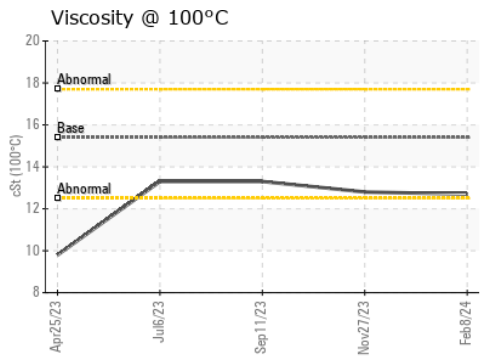

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

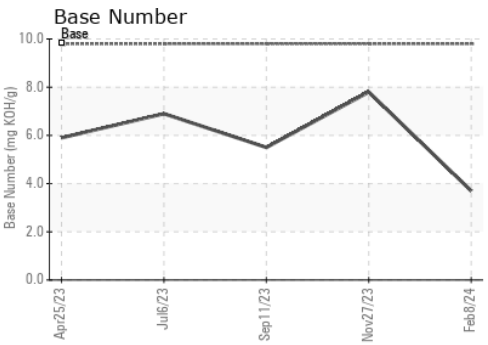
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | **12.7** | 12.8 | 13.3 |

## GRAPHS




**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0105464
**Lab Number** : 06091509
**Unique Number** : 10884362
**Test Package** : FLEET

**Received** : 16 Feb 2024
**Tested** : 17 Feb 2024
**Diagnosed** : 19 Feb 2024 - Angela Borella

Certificate L2367

**GFL Environmental - 983 - Sugar Land Hauling**
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US 77498
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T:
F:

*To discuss this sample report, contact Customer Service at 1-800-237-1369.*
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*Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)*