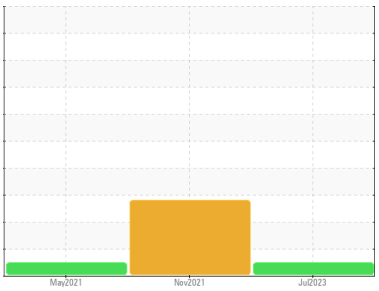
# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Machine Id
**4709M**
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 | | **GFL0086641** | GFL0036205 | GFL0018098 |
| Sample Date | | Client Info | | **18 Jul 2023** | 24 Nov 2021 | 12 May 2021 |
| Machine Age | hrs | Client Info | | **11014** | 6283 | 4496 |
| Oil Age | hrs | Client Info | | **6283** | 4496 | 3318 |
| Oil Changed | | Client Info | | **Changed** | Changed | Changed |
| Sample Status | | | | **NORMAL** | ABNORMAL | NORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >3.0 | **<1.0** | <1.0 | <1.0 |
| Glycol | | WC Method | | **NEG** | NEG | NEG |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >75 | **26** | ▲ 84 | 46 |
| Chromium | ppm | ASTM D5185m | >5 | **1** | 3 | 2 |
| Nickel | ppm | ASTM D5185m | >4 | **0** | <1 | <1 |
| Titanium | ppm | ASTM D5185m | >2 | **0** | <1 | <1 |
| Silver | ppm | ASTM D5185m | >2 | **<1** | <1 | <1 |
| Aluminum | ppm | ASTM D5185m | >15 | **5** | ▲ 20 | 8 |
| Lead | ppm | ASTM D5185m | >25 | **1** | 0 | <1 |
| Copper | ppm | ASTM D5185m | >100 | **<1** | 8 | 7 |
| Tin | ppm | ASTM D5185m | >4 | **<1** | 0 | <1 |
| Antimony | ppm | ASTM D5185m | | **---** | 3 | 0 |
| 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 | **3** | 4 | 3 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 60 | **59** | 63 | 57 |
| Manganese | ppm | ASTM D5185m | 0 | **<1** | 1 | <1 |
| Magnesium | ppm | ASTM D5185m | 1010 | **959** | 1084 | 882 |
| Calcium | ppm | ASTM D5185m | 1070 | **1097** | 1227 | 1019 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **1018** | 1052 | 926 |
| Zinc | ppm | ASTM D5185m | 1270 | **1315** | 1273 | 1113 |
| Sulfur | ppm | ASTM D5185m | 2060 | **3418** | 2460 | 2156 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **4** | 10 | 6 |
| Sodium | ppm | ASTM D5185m | | **4** | 11 | 9 |
| Potassium | ppm | ASTM D5185m | >20 | **4** | ▲ 53 | 22 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >6 | **0.4** | 1.2 | 1 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **10.8** | 14.6 | 12.7 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **22.9** | 27.5 | 26.1 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **22.0** | 27.6 | 24.4 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **7.5** | 5 | 6.2 |

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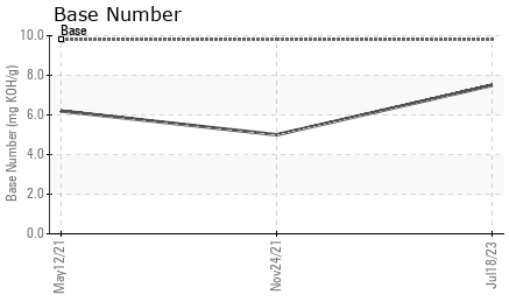
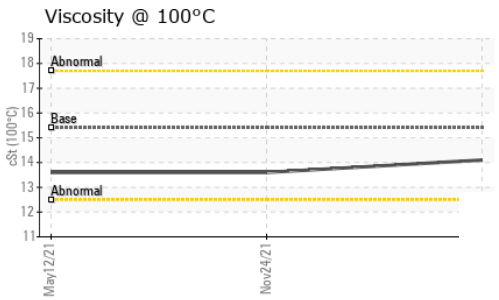


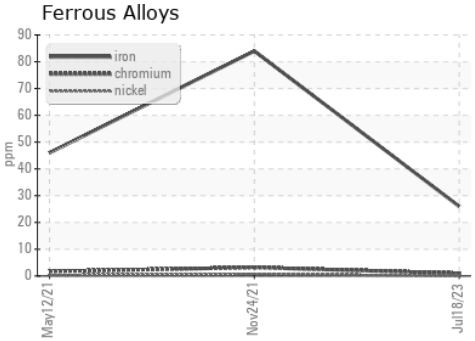




| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

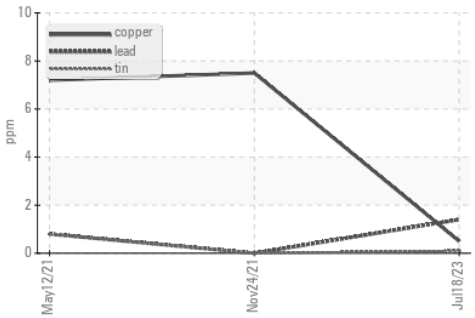
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | **14.1** | 13.6 | 13.6 |

## GRAPHS

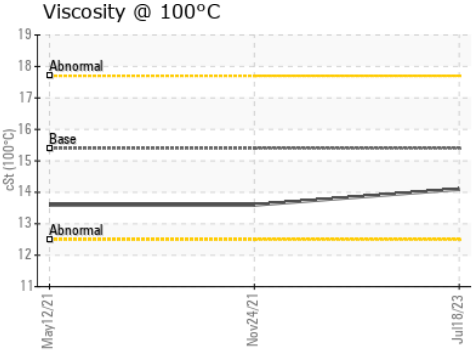
Ferrous Alloys



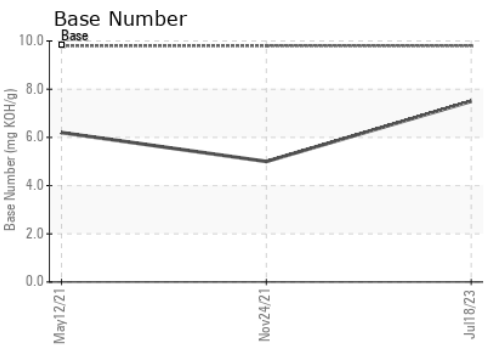

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0086641
**Lab Number** : 05903096
**Unique Number** : 10564452
**Test Package** : FLEET

**Received** : 20 Jul 2023
**Diagnosed** : 20 Jul 2023
**Diagnostician** : 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)*

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