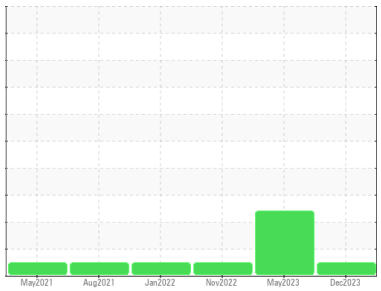
# OIL ANALYSIS REPORT

Sample Rating Trend




**NORMAL**

Machine Id
**4600M**
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 | | **GFL0105715** | GFL0081439 | GFL0057403 |
| Sample Date | | Client Info | | **18 Dec 2023** | 17 May 2023 | 07 Nov 2022 |
| Machine Age | hrs | Client Info | | **18221** | 18221 | 17197 |
| Oil Age | hrs | Client Info | | **18221** | 17197 | 15274 |
| Oil Changed | | Client Info | | **Not Changd** | 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 |
| 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 | >90 | **4** | 32 | 10 |
| Chromium | ppm | ASTM D5185m | >20 | **<1** | 2 | 1 |
| Nickel | ppm | ASTM D5185m | >2 | **0** | 1 | <1 |
| Titanium | ppm | ASTM D5185m | >2 | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185m | >2 | **0** | <1 | <1 |
| Aluminum | ppm | ASTM D5185m | >20 | **2** | 5 | 3 |
| Lead | ppm | ASTM D5185m | >40 | **0** | 3 | <1 |
| Copper | ppm | ASTM D5185m | >330 | **12** | 8 | <1 |
| Tin | ppm | ASTM D5185m | >15 | **0** | 1 | <1 |
| Antimony | ppm | ASTM D5185m | | **---** | --- | --- |
| Vanadium | ppm | ASTM D5185m | | **0** | <1 | <1 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | <1 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 0 | **18** | 14 | 4 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | 2 |
| Molybdenum | ppm | ASTM D5185m | 60 | **61** | 72 | 63 |
| Manganese | ppm | ASTM D5185m | 0 | **0** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 1010 | **885** | 924 | 926 |
| Calcium | ppm | ASTM D5185m | 1070 | **990** | 1008 | 1071 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **864** | 1042 | 1026 |
| Zinc | ppm | ASTM D5185m | 1270 | **1121** | 1284 | 1256 |
| Sulfur | ppm | ASTM D5185m | 2060 | **2815** | 3603 | 3415 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **9** | 19 | 3 |
| Sodium | ppm | ASTM D5185m | | **0** | ▲ 490 | 22 |
| Potassium | ppm | ASTM D5185m | >20 | **1** | ▲ 26 | 4 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >6 | **0.1** | 0.7 | 0.4 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **4.5** | 10.0 | 8.7 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **17.8** | 22.9 | 21.4 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **13.3** | 18.4 | 17 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **9.3** | 8.9 | 9.6 |

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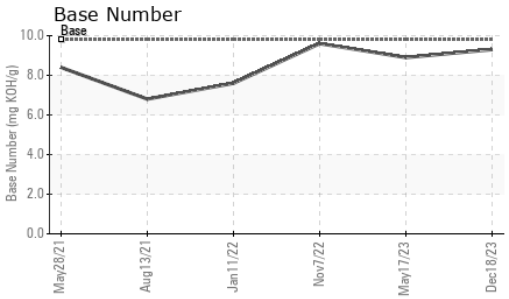
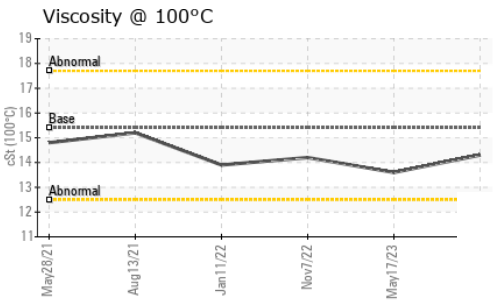
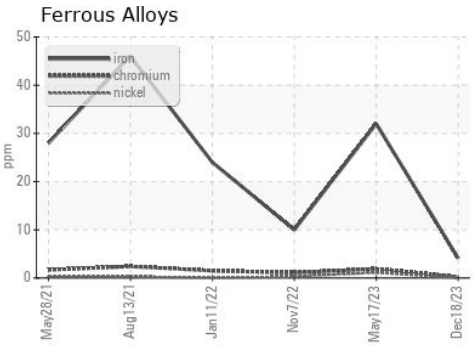


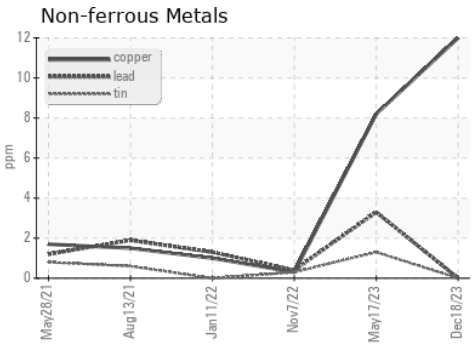



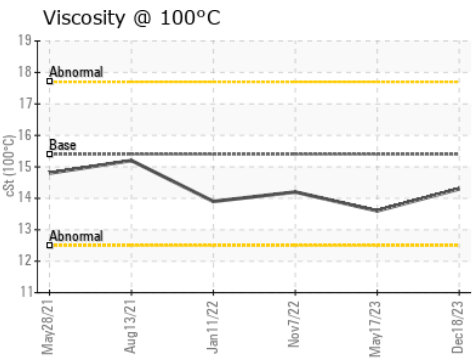

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

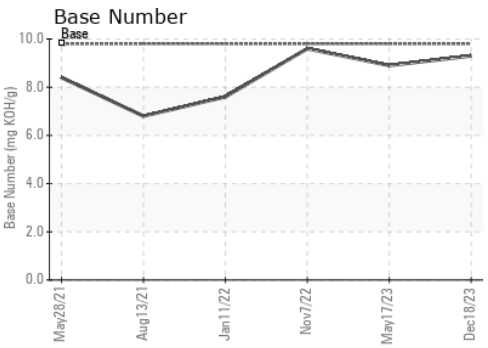
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | **14.3** | 13.6 | 14.2 |

## GRAPHS




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0105715 **Recieved** : 20 Dec 2023
**Lab Number** : 06040220 **Diagnosed** : 21 Dec 2023
**Unique Number** : 10795449 **Diagnostician** : Sean Felton
**Test Package** : FLEET ( Additional Tests: FT-IR(Diff) )

*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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