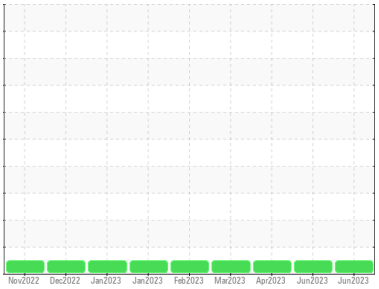
# OIL ANALYSIS REPORT

Sample Rating Trend




**NORMAL**

Machine Id
**428039-402371**
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 | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **GFL0086279** | GFL0081486 | GFL0081507 |
| Sample Date | | Client Info | | **26 Jun 2023** | 03 Jun 2023 | 20 Apr 2023 |
| Machine Age | hrs | Client Info | | **13453** | 13299 | 13008 |
| Oil Age | hrs | Client Info | | **820** | 0 | 0 |
| Oil Changed | | Client Info | | **Not Changd** | Not Changd | Not Changd |
| Sample Status | | | | **NORMAL** | NORMAL | NORMAL |

| CONTAMINATION | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >3.0 | **<1.0** | <1.0 | <1.0 |
| Glycol | | WC Method | | **NEG** | NEG | NEG |

| WEAR METALS | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >120 | **8** | 6 | 22 |
| Chromium | ppm | ASTM D5185m | >20 | **<1** | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >5 | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | >2 | **0** | <1 | <1 |
| Silver | ppm | ASTM D5185m | >2 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | **<1** | 2 | 10 |
| Lead | ppm | ASTM D5185m | >40 | **0** | 0 | <1 |
| Copper | ppm | ASTM D5185m | >330 | **2** | 1 | 13 |
| Tin | ppm | ASTM D5185m | >15 | **<1** | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | **<1** | <1 | 0 |
| Cadmium | ppm | ASTM D5185m | | **<1** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 0 | **3** | 7 | 0 |
| Barium | ppm | ASTM D5185m | 0 | **1** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 60 | **56** | 61 | 64 |
| Manganese | ppm | ASTM D5185m | 0 | **<1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 1010 | **910** | 1005 | 897 |
| Calcium | ppm | ASTM D5185m | 1070 | **1049** | 1117 | 1046 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **955** | 1039 | 955 |
| Zinc | ppm | ASTM D5185m | 1270 | **1211** | 1273 | 1240 |
| Sulfur | ppm | ASTM D5185m | 2060 | **3446** | 3804 | 2976 |

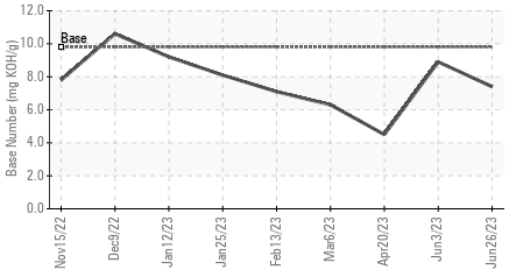
| CONTAMINANTS | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **3** | 4 | 6 |
| Sodium | ppm | ASTM D5185m | | **3** | 2 | 2 |
| Potassium | ppm | ASTM D5185m | >20 | **5** | 2 | 19 |

| INFRA-RED | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >4 | **0.3** | 0.2 | 0.6 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **7.3** | 6.1 | 10.4 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **19.2** | 18.2 | 19.4 |

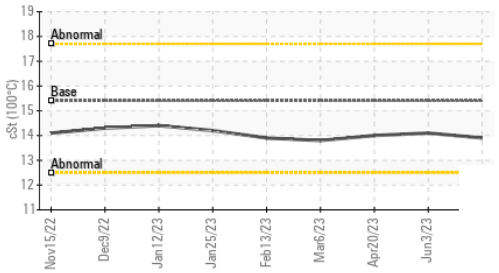
| FLUID DEGRADATION | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **15.6** | 13.8 | 15.2 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **7.4** | 8.9 | 4.5 |

# OIL ANALYSIS REPORT

Base Number




Viscosity @ 100°C

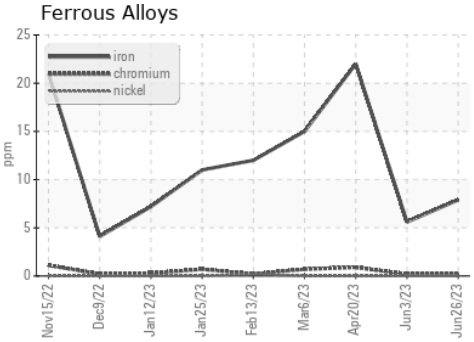



| VISUAL | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| 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 |

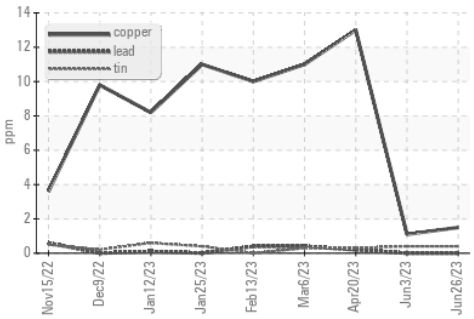
| FLUID PROPERTIES | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | **13.9** | 14.1 | 14.0 |

## GRAPHS

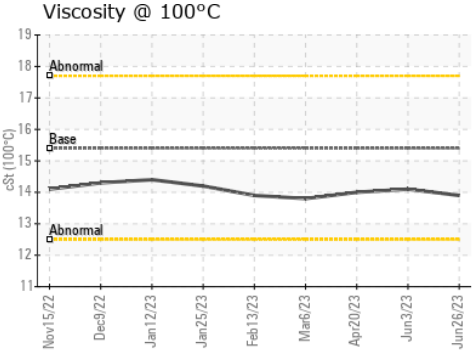
Ferrous Alloys



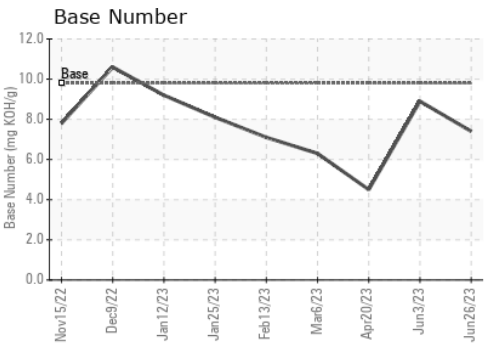

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0086279
**Lab Number** : 05891041
**Unique Number** : 10546851
**Test Package** : FLEET

**Received** : 06 Jul 2023
**Diagnosed** : 06 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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F:

Report Id: GFL868 [WUSCAR] 05891041 (Generated: 07/07/2023 02:34:09) Rev: 1

Submitted By: see also GFL868 - Chelsea Bryan