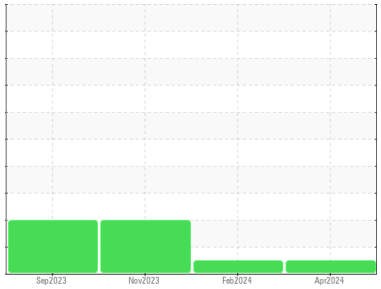
# OIL ANALYSIS REPORT

Area
**(BD49684) {UNASSIGNED}**
Machine Id
**913184**
Component
**1 Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (9 GAL)**

Sample Rating Trend




**NORMAL**

## 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 | | **GFL0115141** | GFL0106678 | GFL0097655 |
| Sample Date | | Client Info | | **02 Apr 2024** | 14 Feb 2024 | 07 Nov 2023 |
| Machine Age | hrs | Client Info | | **2355** | 1995 | 1170 |
| Oil Age | hrs | Client Info | | **360** | 225 | 702 |
| Oil Changed | | Client Info | | **Changed** | Changed | Changed |
| Sample Status | | | | **NORMAL** | NORMAL | ABNORMAL |

| 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 | **7** | 9 | 46 |
| Chromium | ppm | ASTM D5185m | >20 | **<1** | <1 | 1 |
| Nickel | ppm | ASTM D5185m | >5 | **<1** | <1 | 3 |
| Titanium | ppm | ASTM D5185m | >2 | **0** | 0 | <1 |
| Silver | ppm | ASTM D5185m | >2 | **0** | 0 | <1 |
| Aluminum | ppm | ASTM D5185m | >20 | **<1** | 2 | 4 |
| Lead | ppm | ASTM D5185m | >40 | **<1** | 0 | <1 |
| Copper | ppm | ASTM D5185m | >330 | **2** | 0 | 105 |
| Tin | ppm | ASTM D5185m | >15 | **0** | <1 | 3 |
| 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 | **<1** | 2 | 51 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 60 | **57** | 55 | 92 |
| Manganese | ppm | ASTM D5185m | 0 | **0** | <1 | 3 |
| Magnesium | ppm | ASTM D5185m | 1010 | **987** | 908 | 705 |
| Calcium | ppm | ASTM D5185m | 1070 | **1076** | 952 | 1270 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **1081** | 1044 | 716 |
| Zinc | ppm | ASTM D5185m | 1270 | **1286** | 1224 | 908 |
| Sulfur | ppm | ASTM D5185m | 2060 | **3673** | 2981 | 1987 |

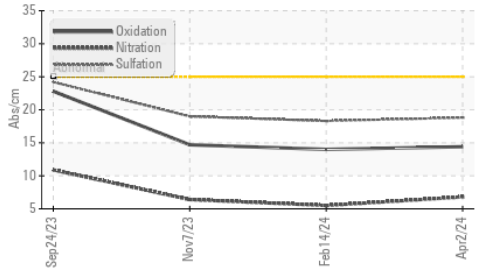
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **2** | 2 | ▲ 49 |
| Sodium | ppm | ASTM D5185m | | **1** | 4 | 7 |
| Potassium | ppm | ASTM D5185m | >20 | **0** | <1 | 5 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >4 | **0.4** | 0.1 | 0.1 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **6.8** | 5.5 | 6.4 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **18.8** | 18.3 | 19.0 |

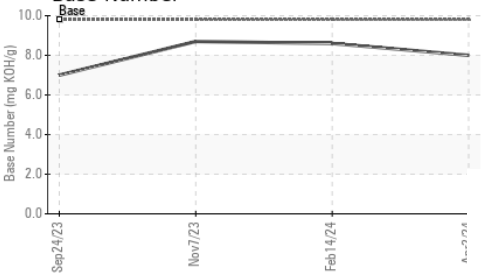
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **14.4** | 14.0 | 14.7 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **8.0** | 8.6 | 8.7 |

# OIL ANALYSIS REPORT

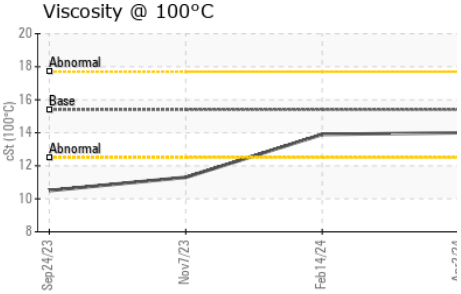
FT-IR (Direct Trend)




Base Number




Viscosity @ 100°C

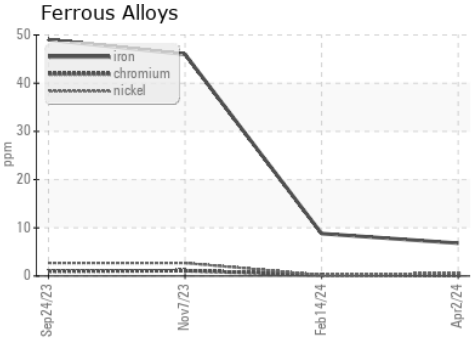



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

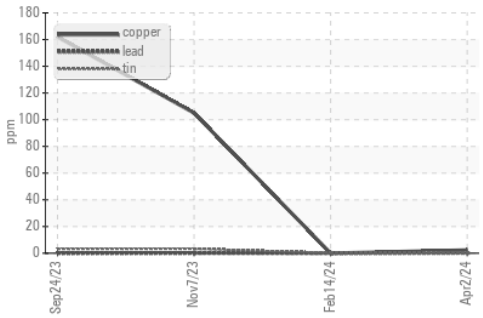
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | **14.0** | 13.9 | 11.3 |

## GRAPHS

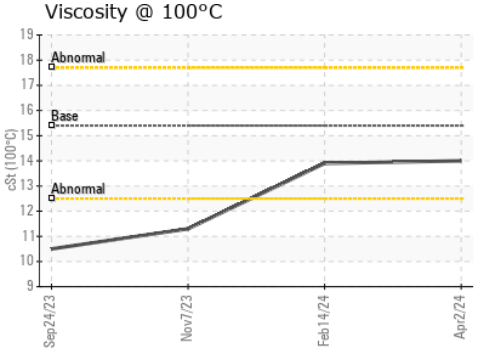
Ferrous Alloys



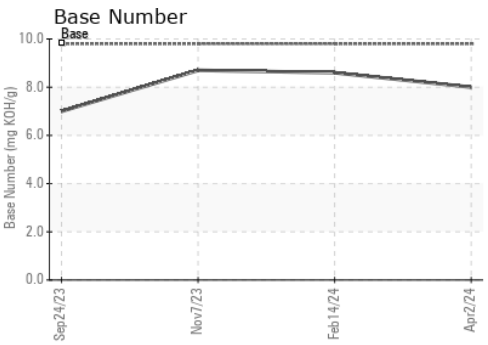

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0115141
**Lab Number** : 06140834
**Unique Number** : 10965642
**Test Package** : FLEET

**Received** : 08 Apr 2024
**Tested** : 08 Apr 2024
**Diagnosed** : 08 Apr 2024 - 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)*

**GFL Environmental - 405 - Arbor Hills**
7811 Chubb Rd
NORTHVILLE, MI
US 48168
Contact: Anthony Hopkins
ahopkins@gflenv.com
T:
F:

Report Id: GFL405 [WUSCAR] 06140834 (Generated: 04/08/2024 17:44:05) Rev: 1

Submitted By: John Nahal