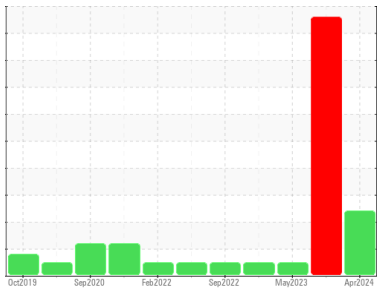
# OIL ANALYSIS REPORT

Sample Rating Trend




**GLYCOL**

Machine Id
## 928063-205248
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (--- GAL)**

## DIAGNOSIS

**Recommendation**
Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

**Wear**
All component wear rates are normal.

**Contamination**
Sodium and/or potassium levels remain high. Test for glycol is negative.

**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 | | **GFL0102245** | GFL0087910 | GFL0056962 |
| Sample Date | | Client Info | | **07 Apr 2024** | 03 Aug 2023 | 04 May 2023 |
| Machine Age | hrs | Client Info | | **0** | 15821 | 0 |
| Oil Age | hrs | Client Info | | **600** | 100 | 600 |
| Oil Changed | | Client Info | | **Changed** | Changed | Changed |
| Sample Status | | | | **ABNORMAL** | SEVERE | NORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >5 | **<1.0** | 0.9 | <1.0 |
| Water | | WC Method | >0.2 | **NEG** | NEG | NEG |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >100 | **26** | 10 | 1 |
| Chromium | ppm | ASTM D5185m | >20 | **1** | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >4 | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185m | >3 | **0** | 1 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | **6** | 4 | 0 |
| Lead | ppm | ASTM D5185m | >40 | **0** | 0 | 0 |
| Copper | ppm | ASTM D5185m | >330 | **5** | 1 | <1 |
| Tin | ppm | ASTM D5185m | >15 | **0** | <1 | 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 | **9** | 18 | 4 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 60 | **61** | 83 | 57 |
| Manganese | ppm | ASTM D5185m | 0 | **<1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 1010 | **944** | 597 | 983 |
| Calcium | ppm | ASTM D5185m | 1070 | **1182** | 1641 | 1068 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **988** | 840 | 1039 |
| Zinc | ppm | ASTM D5185m | 1270 | **1167** | 1040 | 1297 |
| Sulfur | ppm | ASTM D5185m | 2060 | **3407** | 3354 | 3753 |

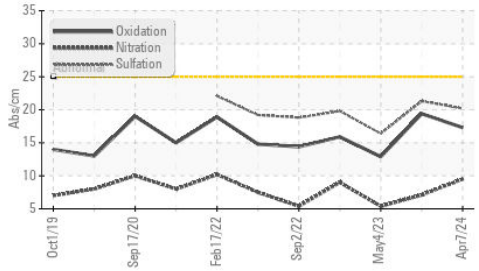
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **23** | 12 | 5 |
| Sodium | ppm | ASTM D5185m | | ▲ **60** | ▲ 486 | 0 |
| Potassium | ppm | ASTM D5185m | >20 | ▲ **66** | ▲ 412 | 2 |
| Glycol | % | *ASTM D2982 | | **NEG** | ▲ 0.10 | NEG |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.5** | 0.1 | 0.2 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **9.5** | 7.1 | 5.4 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **20.2** | 21.3 | 16.4 |

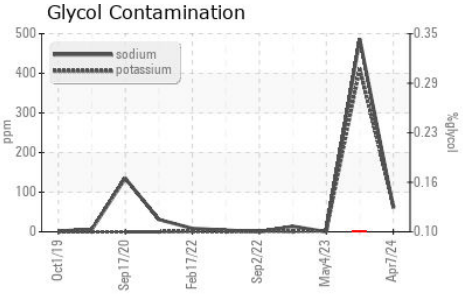
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **17.3** | 19.4 | 12.9 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **9.1** | 14.6 | 8.1 |

# OIL ANALYSIS REPORT

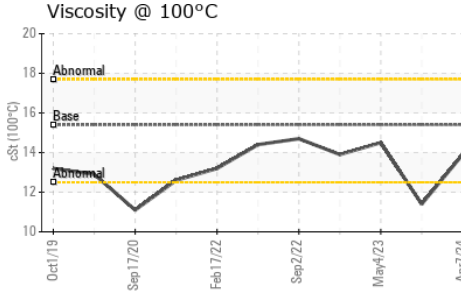
FT-IR (Direct Trend)



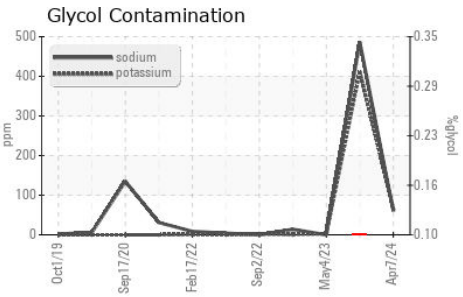

Glycol Contamination




Viscosity @ 100°C




Glycol Contamination

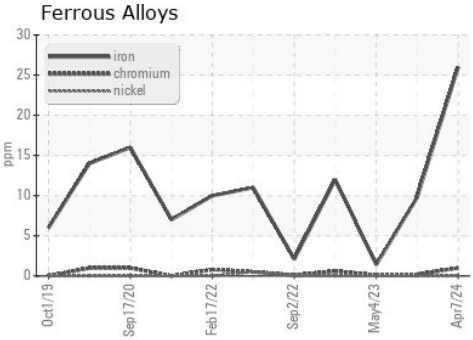



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

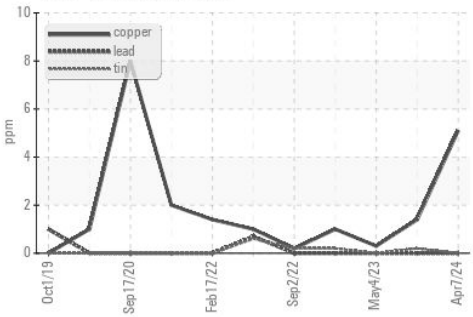
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | **13.9** | 11.4 | 14.5 |

## GRAPHS

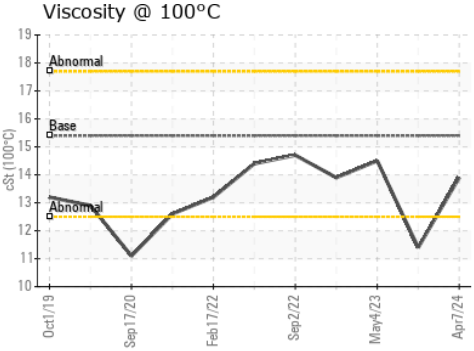
Ferrous Alloys



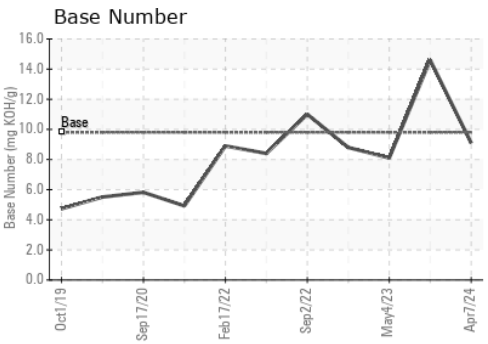

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0102245
**Lab Number** : 06140851
**Unique Number** : 10965659
**Test Package** : FLEET

**Received** : 08 Apr 2024
**Tested** : 10 Apr 2024
**Diagnosed** : 10 Apr 2024 - Jonathan Hester

**GFL Environmental - 859 - Bay City**
700 Avenue F
Bay City, TX
US 77414
Contact: JONATHON BROWN
jonathon.brown@gflenv.com
T:
F:

*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)*