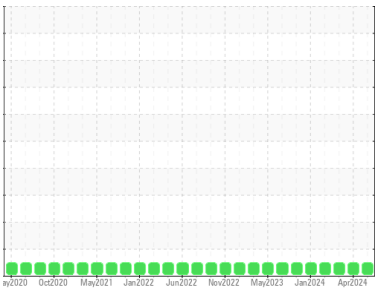
# OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL

Area
**(41036HA)**
Machine Id
**427032**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (42 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 | | **GFL0126709** | GFL0114608 | GFL0096497 |
| Sample Date | | Client Info | | **01 Jul 2024** | 17 Apr 2024 | 12 Mar 2024 |
| Machine Age | hrs | Client Info | | **18504** | 0 | 18244 |
| Oil Age | hrs | Client Info | | **260** | 0 | 300 |
| Oil Changed | | Client Info | | **Changed** | N/A | Changed |
| Sample Status | | | | **NORMAL** | NORMAL | 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 | >165 | **18** | 6 | 14 |
| Chromium | ppm | ASTM D5185m | >5 | **<1** | 0 | <1 |
| Nickel | ppm | ASTM D5185m | >4 | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | >2 | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185m | >2 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | **3** | 2 | 1 |
| Lead | ppm | ASTM D5185m | >150 | **<1** | <1 | 0 |
| Copper | ppm | ASTM D5185m | >90 | **<1** | <1 | 1 |
| Tin | ppm | ASTM D5185m | >5 | **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 | **5** | 10 | 10 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 60 | **61** | 59 | 54 |
| Manganese | ppm | ASTM D5185m | 0 | **<1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 1010 | **1027** | 935 | 895 |
| Calcium | ppm | ASTM D5185m | 1070 | **1222** | 1098 | 1066 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **1141** | 1085 | 1018 |
| Zinc | ppm | ASTM D5185m | 1270 | **1348** | 1253 | 1199 |
| Sulfur | ppm | ASTM D5185m | 2060 | **3783** | 3621 | 3143 |

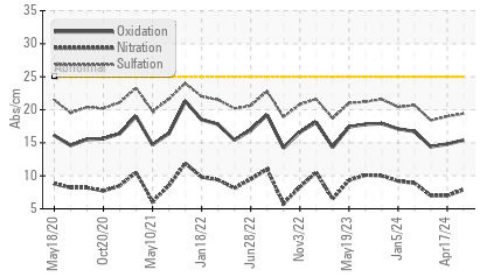
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >35 | **13** | 5 | 6 |
| Sodium | ppm | ASTM D5185m | | **4** | 5 | 2 |
| Potassium | ppm | ASTM D5185m | >20 | **3** | 2 | 0 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >7.5 | **0.4** | 0.3 | 0.3 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **7.9** | 7.0 | 7.0 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **19.4** | 19.0 | 18.4 |

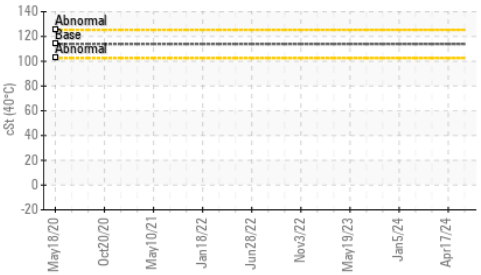
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **15.4** | 14.8 | 14.4 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **8.2** | 8.5 | 9.0 |

# OIL ANALYSIS REPORT

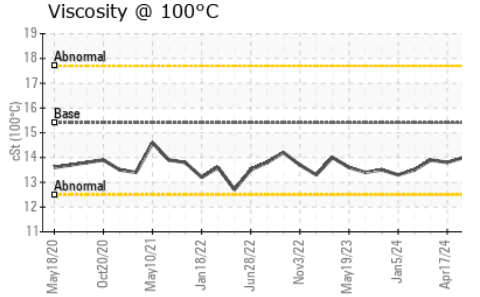
FT-IR (Direct Trend)



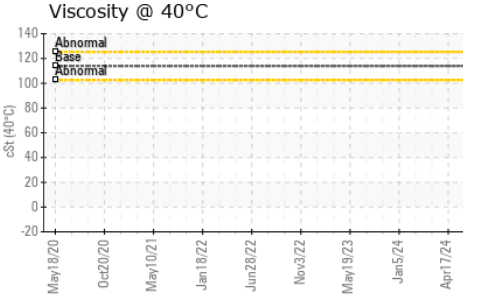

Viscosity @ 40°C




Viscosity @ 100°C




Viscosity @ 40°C

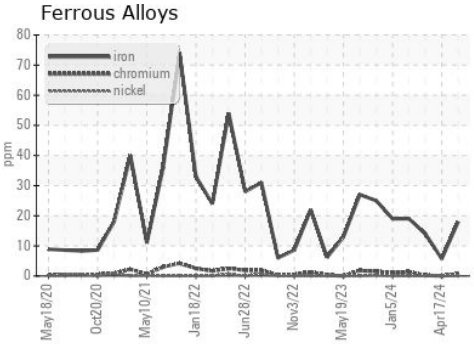



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

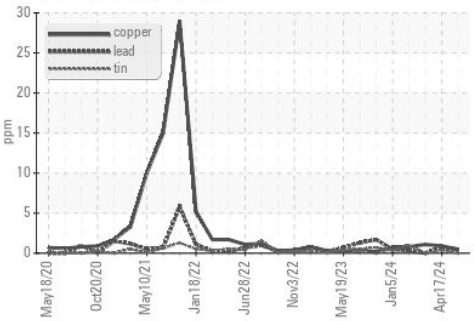
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | **14.0** | 13.8 | 13.9 |

## GRAPHS

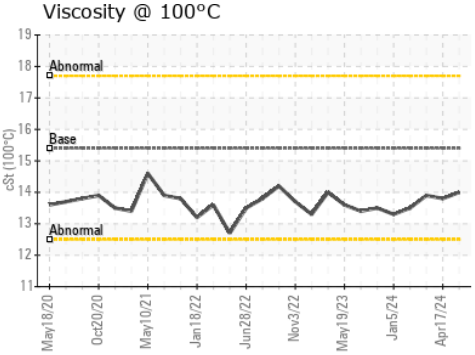
Ferrous Alloys



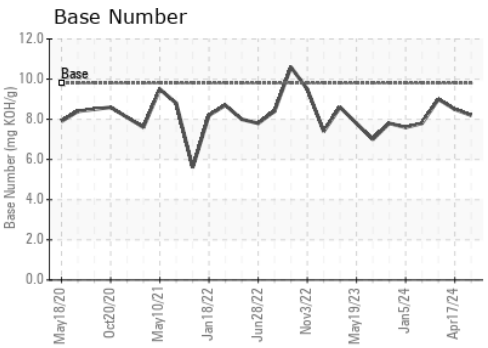

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0126709
**Lab Number** : 06231024
**Unique Number** : 11114517
**Test Package** : FLEET ( Additional Tests: KV40 )

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

*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 - 656 - Culpeper Hauling**
15490 Montanus Drive
Culpeper, VA
US 22701
Contact: Matt Hanna
mhanna@gflenv.com
T: (540)727-0887
F: