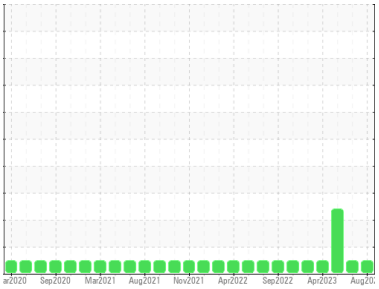
# OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL

Machine Id
**3866**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (42 QTS)**

## 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 | | **GFL0087776** | GFL0082236 | GFL0073830 |
| Sample Date | | Client Info | | **17 Aug 2023** | 22 Jun 2023 | 05 May 2023 |
| Machine Age | hrs | Client Info | | **11720** | 11151 | 10885 |
| Oil Age | hrs | Client Info | | **569** | 521 | 255 |
| Oil Changed | | Client Info | | **Changed** | Changed | Not Changd |
| Sample Status | | | | **NORMAL** | NORMAL | SEVERE |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >3.0 | **<1.0** | 0.6 | 9.7 |
| Glycol | | WC Method | | **NEG** | NEG | NEG |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >165 | **34** | 17 | 18 |
| Chromium | ppm | ASTM D5185m | >5 | **3** | <1 | 1 |
| Nickel | ppm | ASTM D5185m | >4 | **0** | <1 | 0 |
| Titanium | ppm | ASTM D5185m | >2 | **<1** | 0 | 0 |
| Silver | ppm | ASTM D5185m | >2 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | **6** | 2 | <1 |
| Lead | ppm | ASTM D5185m | >150 | **0** | 0 | 0 |
| Copper | ppm | ASTM D5185m | >90 | **<1** | <1 | 1 |
| Tin | ppm | ASTM D5185m | >5 | **0** | 0 | 0 |
| Vanadium | ppm | ASTM D5185m | | **<1** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

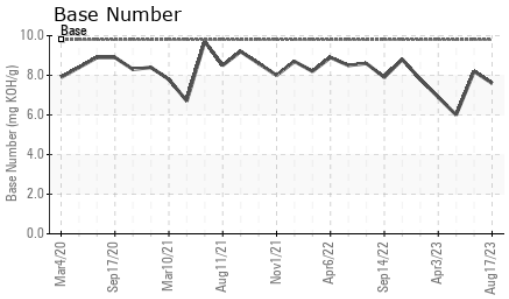
| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 0 | **<1** | 4 | 6 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 60 | **63** | 67 | 53 |
| Manganese | ppm | ASTM D5185m | 0 | **<1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 1010 | **1012** | 942 | 814 |
| Calcium | ppm | ASTM D5185m | 1070 | **1159** | 1192 | 948 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **1039** | 1103 | 895 |
| Zinc | ppm | ASTM D5185m | 1270 | **1300** | 1311 | 1103 |
| Sulfur | ppm | ASTM D5185m | 2060 | **3504** | 3338 | 3250 |

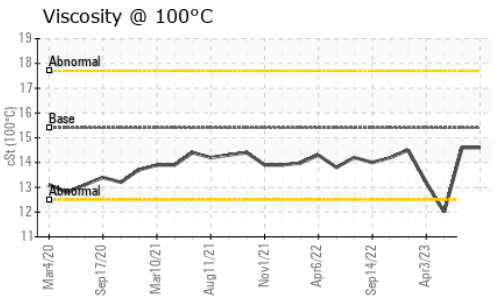
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >35 | **4** | 3 | 3 |
| Sodium | ppm | ASTM D5185m | | **5** | 0 | 2 |
| Potassium | ppm | ASTM D5185m | >20 | **5** | 2 | 1 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >7.5 | **1** | 0.6 | 0.7 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **10.2** | 7.8 | 8.7 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **21.5** | 20.6 | 20.2 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **17.0** | 16.6 | 19.8 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **7.6** | 8.2 | 6.0 |

# OIL ANALYSIS REPORT

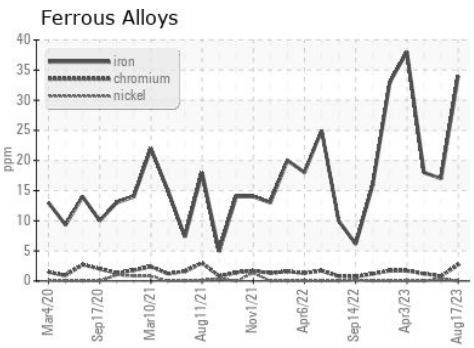


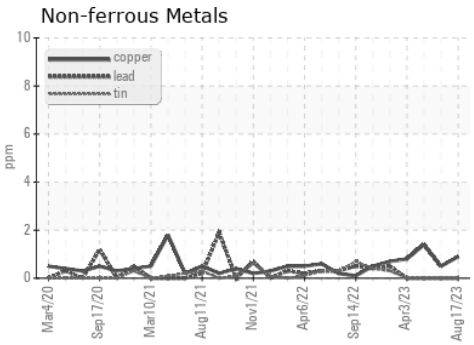



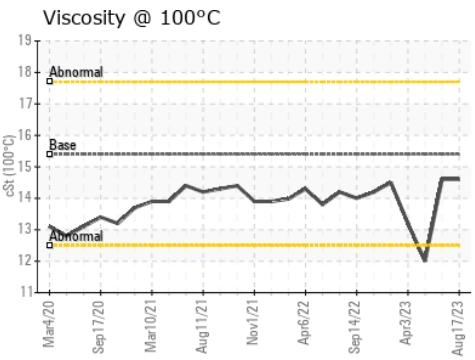

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

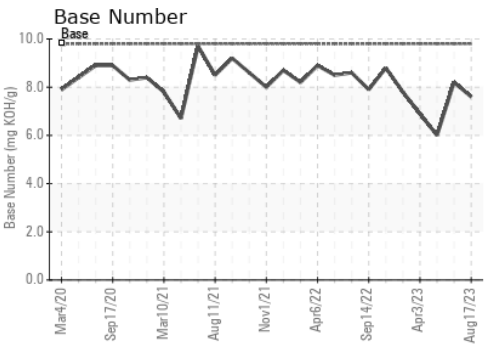
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | **14.6** | 14.6 | ▲ 12.0 |

## GRAPHS




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0087776
**Lab Number** : 05930645
**Unique Number** : 10615916
**Test Package** : FLEET

**Received** : 22 Aug 2023
**Diagnosed** : 22 Aug 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)*


**GFL Environmental - 006 - Wilmington**
3618 US Highway 421 N
Wilmington, NC
US 28401
Contact: Eric Wood
eric.wood@gflenv.com
T: (717)723-1956
F: (910)762-6880