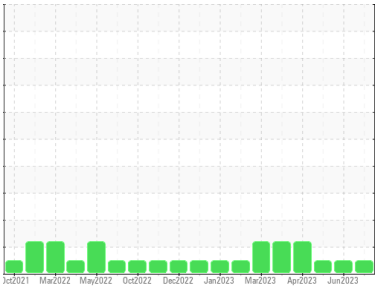
# OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL

Machine Id
**741006-310097**
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 | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **GFL0084612** | GFL0084715 | GFL0078113 |
| Sample Date | | Client Info | | **13 Sep 2023** | 14 Jun 2023 | 09 May 2023 |
| Machine Age | mls | Client Info | | **106895** | 0 | 7370 |
| Oil Age | mls | Client Info | | **0** | 0 | 0 |
| Oil Changed | | Client Info | | **Changed** | Changed | Not Changd |
| Sample Status | | | | **NORMAL** | NORMAL | NORMAL |

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

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >110 | **9** | 20 | 19 |
| Chromium | ppm | ASTM D5185m | >4 | **<1** | 2 | 2 |
| Nickel | ppm | ASTM D5185m | >2 | **0** | 1 | 1 |
| Titanium | ppm | ASTM D5185m | | **0** | <1 | 0 |
| Silver | ppm | ASTM D5185m | >2 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >25 | **0** | 4 | 4 |
| Lead | ppm | ASTM D5185m | >45 | **0** | 21 | 23 |
| Copper | ppm | ASTM D5185m | >85 | **0** | 2 | 2 |
| Tin | ppm | ASTM D5185m | >4 | **0** | 2 | 2 |
| Vanadium | ppm | ASTM D5185m | | **0** | <1 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | <1 | 0 |

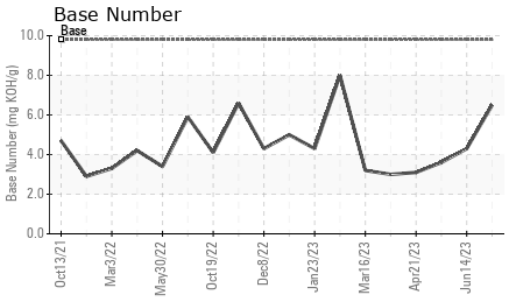
| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 0 | **18** | 14 | 8 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 60 | **53** | 66 | 62 |
| Manganese | ppm | ASTM D5185m | 0 | **<1** | 1 | <1 |
| Magnesium | ppm | ASTM D5185m | 1010 | **629** | 726 | 621 |
| Calcium | ppm | ASTM D5185m | 1070 | **1678** | 2073 | 1863 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **721** | 914 | 839 |
| Zinc | ppm | ASTM D5185m | 1270 | **969** | 1158 | 1077 |
| Sulfur | ppm | ASTM D5185m | 2060 | **2916** | 3164 | 2447 |

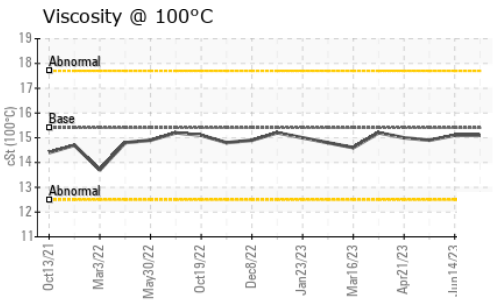
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >30 | **5** | 7 | 7 |
| Sodium | ppm | ASTM D5185m | | **6** | 10 | 12 |
| Potassium | ppm | ASTM D5185m | >20 | **0** | <1 | 2 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.1** | 0.1 | 0.1 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **9.6** | 12.8 | 13.3 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **20.2** | 29.9 | 29.9 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **17.2** | 25.0 | 25.0 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **6.5** | 4.3 | 3.6 |

# OIL ANALYSIS REPORT

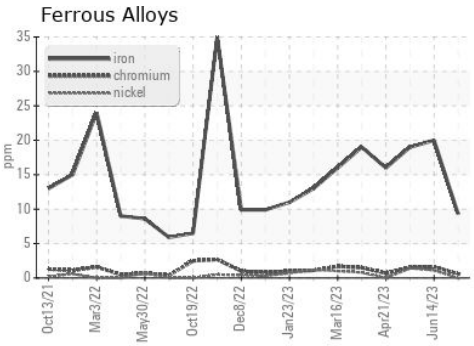


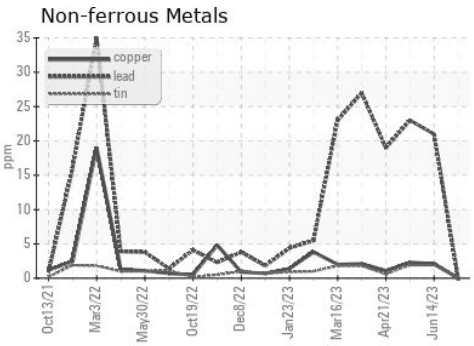



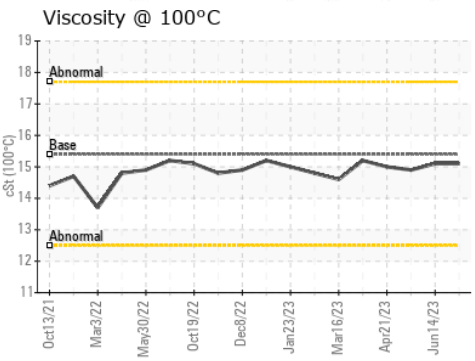

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

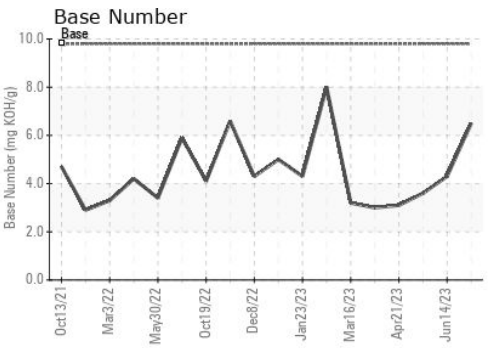
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | **15.1** | 15.1 | 14.9 |

## GRAPHS




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0084612
**Lab Number** : 05954542
**Unique Number** : 10655755
**Test Package** : FLEET

**Received** : 18 Sep 2023
**Diagnosed** : 20 Sep 2023
**Diagnostician** : Don Baldridge

*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 - 856 - Houston South**
8515 Highway 6 South
Houston, TX
US 77083
Contact: KEITH ROWALD
krowald@gflenv.com
T: (303)641-3906
F: