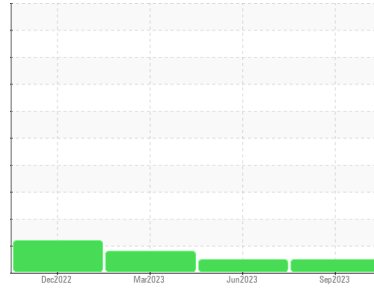




# OIL ANALYSIS REPORT

Sample Rating Trend

**NORMAL**



Area  
**(BD27164)**  
Machine Id  
**913089**  
Component  
**Diesel Engine**  
Fluid  
**PETRO CANADA DURON SHP 15W40 (--- GAL)**

## DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor. ( Customer Sample Comment: Sample only )

### 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 |             | <b>GFL0088280</b>  | GFL0077510  | GFL0060761  |
| Sample Date   | Client Info |             | <b>11 Sep 2023</b> | 18 Jun 2023 | 14 Mar 2023 |
| Machine Age   | hrs         | Client Info | <b>2217</b>        | 1685        | 1095        |
| Oil Age       | hrs         | Client Info | <b>532</b>         | 590         | 453         |
| Oil Changed   | Client Info |             | <b>Not Chngd</b>   | Changed     | Changed     |
| Sample Status |             |             | <b>NORMAL</b>      | NORMAL      | ABNORMAL    |

## CONTAMINATION

|        | method    | limit/base | current        | history1 | history2 |
|--------|-----------|------------|----------------|----------|----------|
| Fuel   | WC Method | >3.0       | <b>&lt;1.0</b> | <1.0     | <1.0     |
| Glycol | WC Method |            | <b>NEG</b>     | NEG      | NEG      |

## WEAR METALS

|          | method | limit/base       | current      | history1 | history2 |
|----------|--------|------------------|--------------|----------|----------|
| Iron     | ppm    | ASTM D5185m >120 | <b>16</b>    | 21       | 24       |
| Chromium | ppm    | ASTM D5185m >20  | <b>&lt;1</b> | 1        | 1        |
| Nickel   | ppm    | ASTM D5185m >5   | <b>2</b>     | 5        | 7        |
| Titanium | ppm    | ASTM D5185m >2   | <b>0</b>     | 0        | 0        |
| Silver   | ppm    | ASTM D5185m >2   | <b>&lt;1</b> | <1       | <1       |
| Aluminum | ppm    | ASTM D5185m >20  | <b>&lt;1</b> | 1        | 2        |
| Lead     | ppm    | ASTM D5185m >40  | <b>&lt;1</b> | <1       | <1       |
| Copper   | ppm    | ASTM D5185m >330 | <b>6</b>     | 30       | 156      |
| Tin      | ppm    | ASTM D5185m >15  | <b>1</b>     | 1        | 2        |
| Vanadium | ppm    | ASTM D5185m      | <b>0</b>     | 0        | <1       |
| Cadmium  | ppm    | ASTM D5185m      | <b>0</b>     | 0        | 0        |

## ADDITIVES

|            | method | limit/base       | current      | history1 | history2 |
|------------|--------|------------------|--------------|----------|----------|
| Boron      | ppm    | ASTM D5185m 0    | <b>4</b>     | 4        | 9        |
| Barium     | ppm    | ASTM D5185m 0    | <b>0</b>     | 0        | 0        |
| Molybdenum | ppm    | ASTM D5185m 60   | <b>61</b>    | 63       | 65       |
| Manganese  | ppm    | ASTM D5185m 0    | <b>&lt;1</b> | <1       | 1        |
| Magnesium  | ppm    | ASTM D5185m 1010 | <b>915</b>   | 1015     | 934      |
| Calcium    | ppm    | ASTM D5185m 1070 | <b>1080</b>  | 1142     | 1125     |
| Phosphorus | ppm    | ASTM D5185m 1150 | <b>950</b>   | 1016     | 946      |
| Zinc       | ppm    | ASTM D5185m 1270 | <b>1184</b>  | 1332     | 1187     |
| Sulfur     | ppm    | ASTM D5185m 2060 | <b>3043</b>  | 2980     | 2465     |

## CONTAMINANTS

|           | method | limit/base      | current  | history1 | history2 |
|-----------|--------|-----------------|----------|----------|----------|
| Silicon   | ppm    | ASTM D5185m >25 | <b>5</b> | 6        | 7        |
| Sodium    | ppm    | ASTM D5185m     | <b>4</b> | 3        | 4        |
| Potassium | ppm    | ASTM D5185m >20 | <b>2</b> | <1       | 2        |

## INFRA-RED

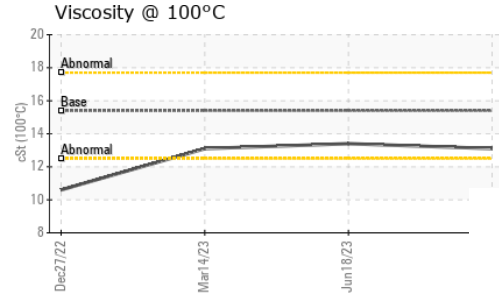
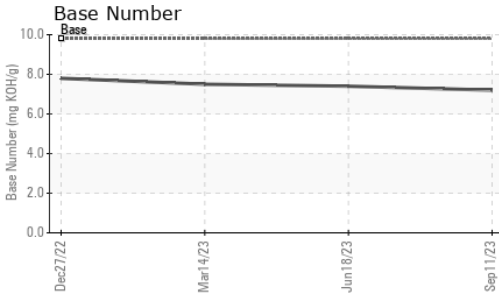
|           | method   | limit/base      | current     | history1 | history2 |
|-----------|----------|-----------------|-------------|----------|----------|
| Soot %    | %        | *ASTM D7844 >4  | <b>0.8</b>  | 1        | 0.7      |
| Nitration | Abs/cm   | *ASTM D7624 >20 | <b>8.6</b>  | 9.6      | 9.2      |
| Sulfation | Abs/.1mm | *ASTM D7415 >30 | <b>19.9</b> | 21.7     | 20.7     |

## FLUID DEGRADATION

|                  | method   | limit/base      | current     | history1 | history2 |
|------------------|----------|-----------------|-------------|----------|----------|
| Oxidation        | Abs/.1mm | *ASTM D7414 >25 | <b>15.6</b> | 17.8     | 16.7     |
| Base Number (BN) | mg KOH/g | ASTM D2896 9.8  | <b>7.2</b>  | 7.4      | 7.5      |



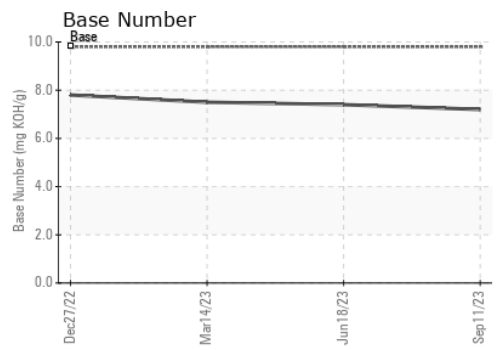
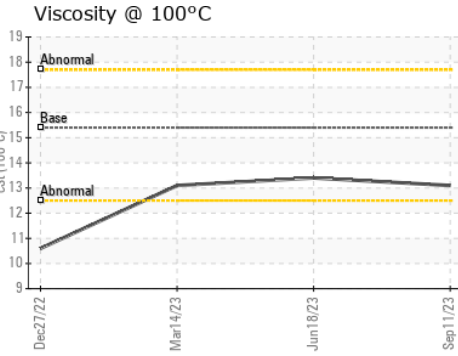
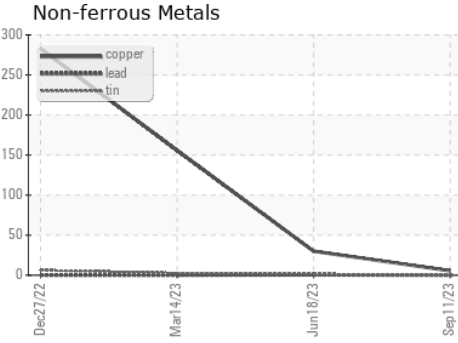
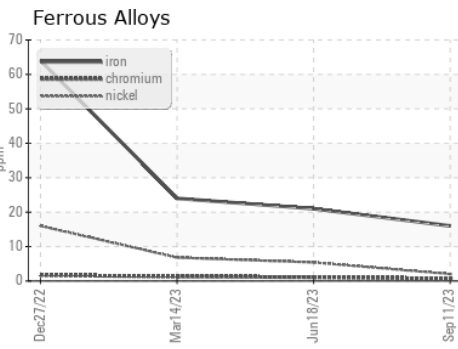
# OIL ANALYSIS REPORT



| VISUAL           | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| White Metal      | scalar | *Visual    | NONE    | NONE     | NONE     |
| Yellow Metal     | scalar | *Visual    | NONE    | NONE     | NONE     |
| Precipitate      | scalar | *Visual    | NONE    | NONE     | NONE     |
| Silt             | scalar | *Visual    | NONE    | NONE     | NONE     |
| Debris           | scalar | *Visual    | NONE    | NONE     | NONE     |
| Sand/Dirt        | scalar | *Visual    | NONE    | NONE     | NONE     |
| Appearance       | scalar | *Visual    | NORML   | NORML    | NORML    |
| Odor             | scalar | *Visual    | NORML   | NORML    | NORML    |
| Emulsified Water | scalar | *Visual    | >0.2    | NEG      | NEG      |
| Free Water       | scalar | *Visual    |         | NEG      | NEG      |

| FLUID PROPERTIES | method | limit/base | current | history1    | history2 |      |
|------------------|--------|------------|---------|-------------|----------|------|
| Visc @ 100°C     | cSt    | ASTM D445  | 15.4    | <b>13.1</b> | 13.4     | 13.1 |

## GRAPHS



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : GFL0088280 **Received** : 12 Sep 2023  
**Lab Number** : **05947736** **Diagnosed** : 14 Sep 2023  
**Unique Number** : 10643695 **Diagnostician** : Jonathan Hester  
**Test Package** : FLEET

**GFL Environmental - 625 - Harrison Hauling**  
 4102 Industrial Pkwy  
 Harrison, MI  
 US 48625  
 Contact: Glenda Standen  
 gstanden@gflenv.com

Certificate L2367  
 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)