

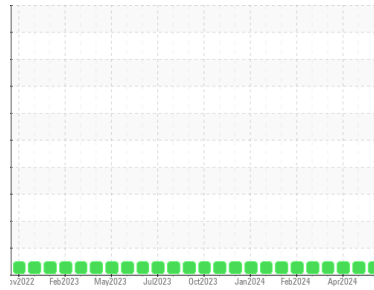


# OIL ANALYSIS REPORT



Machine Id  
**422090-29**  
 Component  
**Diesel Engine**  
 Fluid  
**PETRO CANADA DURON SHP 15W40 (--- GAL)**

### Sample Rating Trend



**NORMAL**



## 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 |             | <b>GFL0121220</b>  | GFL0118629  | GFL0118614  |
| Sample Date   | Client Info |             | <b>29 May 2024</b> | 01 May 2024 | 23 Apr 2024 |
| Machine Age   | hrs         | Client Info | <b>0</b>           | 0           | 0           |
| Oil Age       | hrs         | Client Info | <b>0</b>           | 600         | 0           |
| Oil Changed   | Client Info |             | <b>Not Changed</b> | Changed     | Not Changed |
| Sample Status |             |             | <b>NORMAL</b>      | NORMAL      | NORMAL      |

## CONTAMINATION

|        | method    | limit/base | current        | history1 | history2 |
|--------|-----------|------------|----------------|----------|----------|
| Fuel   | WC Method | >3.0       | <b>&lt;1.0</b> | <1.0     | <1.0     |
| Water  | WC Method | >0.2       | <b>NEG</b>     | NEG      | NEG      |
| Glycol | WC Method |            | <b>NEG</b>     | NEG      | NEG      |

## WEAR METALS

|          | method | limit/base       | current      | history1 | history2 |
|----------|--------|------------------|--------------|----------|----------|
| Iron     | ppm    | ASTM D5185m >120 | <b>2</b>     | 7        | 5        |
| Chromium | ppm    | ASTM D5185m >20  | <b>0</b>     | 0        | 0        |
| Nickel   | ppm    | ASTM D5185m >5   | <b>0</b>     | 0        | 0        |
| Titanium | ppm    | ASTM D5185m >2   | <b>0</b>     | 0        | 0        |
| Silver   | ppm    | ASTM D5185m >2   | <b>0</b>     | 0        | 0        |
| Aluminum | ppm    | ASTM D5185m >20  | <b>4</b>     | 2        | 2        |
| Lead     | ppm    | ASTM D5185m >40  | <b>0</b>     | <1       | 0        |
| Copper   | ppm    | ASTM D5185m >330 | <b>1</b>     | 2        | 1        |
| Tin      | ppm    | ASTM D5185m >15  | <b>&lt;1</b> | 0        | <1       |
| Vanadium | ppm    | ASTM D5185m      | <b>0</b>     | 0        | 0        |
| Cadmium  | ppm    | ASTM D5185m      | <b>0</b>     | 0        | 0        |

## ADDITIVES

|            | method | limit/base       | current      | history1 | history2 |
|------------|--------|------------------|--------------|----------|----------|
| Boron      | ppm    | ASTM D5185m 0    | <b>3</b>     | 3        | 7        |
| Barium     | ppm    | ASTM D5185m 0    | <b>&lt;1</b> | 0        | 0        |
| Molybdenum | ppm    | ASTM D5185m 60   | <b>57</b>    | 52       | 51       |
| Manganese  | ppm    | ASTM D5185m 0    | <b>&lt;1</b> | 0        | <1       |
| Magnesium  | ppm    | ASTM D5185m 1010 | <b>907</b>   | 858      | 845      |
| Calcium    | ppm    | ASTM D5185m 1070 | <b>1123</b>  | 1285     | 1185     |
| Phosphorus | ppm    | ASTM D5185m 1150 | <b>1095</b>  | 1037     | 1032     |
| Zinc       | ppm    | ASTM D5185m 1270 | <b>1228</b>  | 1255     | 1216     |
| Sulfur     | ppm    | ASTM D5185m 2060 | <b>3505</b>  | 3688     | 3531     |

## CONTAMINANTS

|           | method | limit/base      | current      | history1 | history2 |
|-----------|--------|-----------------|--------------|----------|----------|
| Silicon   | ppm    | ASTM D5185m >25 | <b>3</b>     | 3        | 3        |
| Sodium    | ppm    | ASTM D5185m     | <b>&lt;1</b> | <1       | <1       |
| Potassium | ppm    | ASTM D5185m >20 | <b>9</b>     | 6        | 4        |

## INFRA-RED

|           | method   | limit/base      | current     | history1 | history2 |
|-----------|----------|-----------------|-------------|----------|----------|
| Soot %    | %        | *ASTM D7844 >4  | <b>0.2</b>  | 0.3      | 0.3      |
| Nitration | Abs/cm   | *ASTM D7624 >20 | <b>5.8</b>  | 7.1      | 6.7      |
| Sulfation | Abs/.1mm | *ASTM D7415 >30 | <b>17.6</b> | 18.4     | 18.2     |

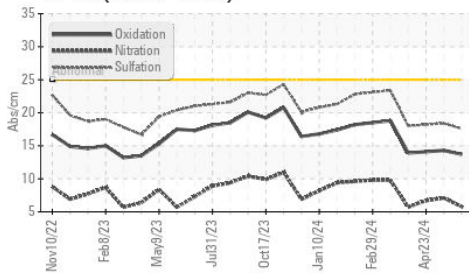
## FLUID DEGRADATION

|                  | method   | limit/base      | current     | history1 | history2 |
|------------------|----------|-----------------|-------------|----------|----------|
| Oxidation        | Abs/.1mm | *ASTM D7414 >25 | <b>13.7</b> | 14.3     | 14.1     |
| Base Number (BN) | mg KOH/g | ASTM D2896 9.8  | <b>8.3</b>  | 8.2      | 7.5      |

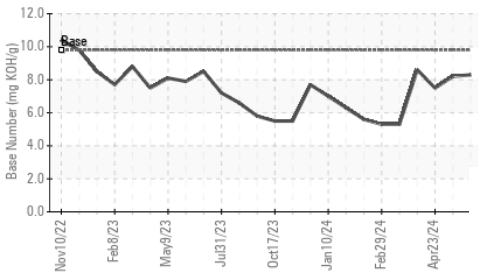


# OIL ANALYSIS REPORT

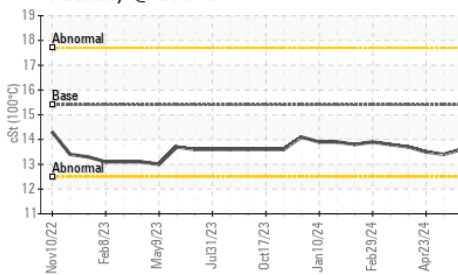
FT-IR (Direct Trend)



Base Number



Viscosity @ 100°C

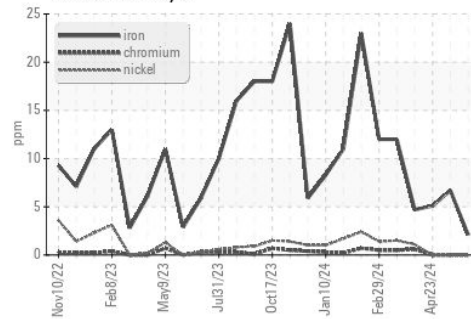


| VISUAL           | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| White Metal      | scalar | *Visual    | NONE    | NONE     | NONE     |
| Yellow Metal     | scalar | *Visual    | NONE    | NONE     | NONE     |
|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

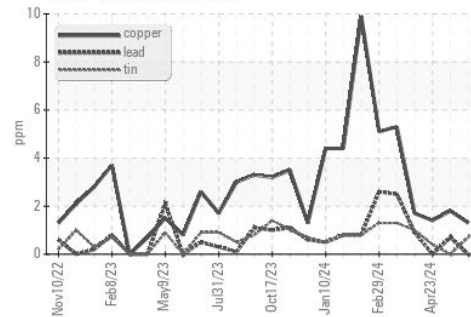
| FLUID PROPERTIES | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| Visc @ 100°C     | cSt    | ASTM D445  | 15.4    | 13.6     | 13.4     |

## GRAPHS

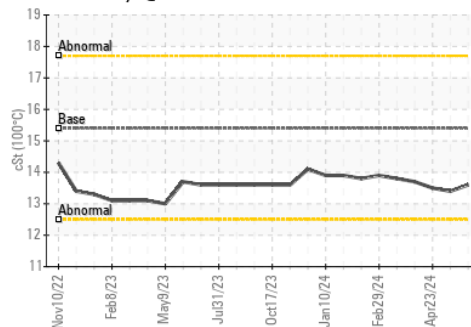
Ferrous Alloys



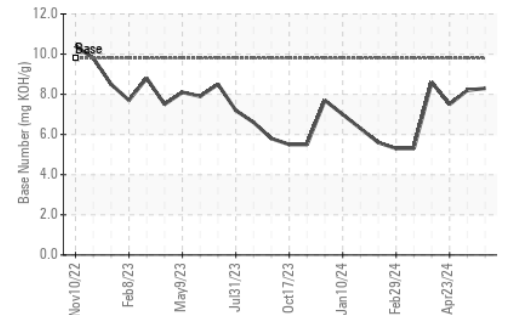
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
 Sample No. : GFL0121220  
 Lab Number : 06199846  
 Unique Number : 11061969  
 Test Package : FLEET

Received : 05 Jun 2024  
 Tested : 05 Jun 2024  
 Diagnosed : 05 Jun 2024 - Wes Davis

GFL Environmental - 846 - Mayfield Hauling  
 3426 State Route 45  
 Mayfield, KY  
 US 42066

Contact: Jack Lindsey  
 jack.lindsey@gflenv.com  
 T: (270)970-3690

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)