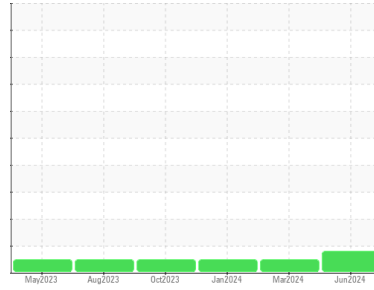




# OIL ANALYSIS REPORT

## Sample Rating Trend



**WEAR**



Machine Id  
**923015**  
 Component  
**Diesel Engine**  
 Fluid  
**PETRO CANADA DURON SHP 15W40 (--- GAL)**

## DIAGNOSIS

### Recommendation

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.

### Wear

The aluminum level is abnormal. All other 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>GFL0123778</b>  | GFL0112975  | GFL0108409  |
| Sample Date   | Client Info |             | <b>13 Jun 2024</b> | 29 Mar 2024 | 17 Jan 2024 |
| Machine Age   | hrs         | Client Info | <b>23867</b>       | 23332       | 22755       |
| Oil Age       | hrs         | Client Info | <b>535</b>         | 23332       | 22755       |
| Oil Changed   | Client Info |             | <b>Changed</b>     | Changed     | Changed     |
| Sample Status |             |             | <b>ABNORMAL</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>8</b>     | 7        | 10       |
| Chromium | ppm    | ASTM D5185m >20  | <b>&lt;1</b> | <1       | <1       |
| Nickel   | ppm    | ASTM D5185m >5   | <b>0</b>     | <1       | <1       |
| Titanium | ppm    | ASTM D5185m >2   | <b>0</b>     | <1       | <1       |
| Silver   | ppm    | ASTM D5185m >2   | <b>0</b>     | 0        | 0        |
| Aluminum | ppm    | ASTM D5185m >20  | <b>▲ 21</b>  | 2        | 21       |
| Lead     | ppm    | ASTM D5185m >40  | <b>1</b>     | <1       | <1       |
| Copper   | ppm    | ASTM D5185m >330 | <b>2</b>     | <1       | 3        |
| Tin      | ppm    | ASTM D5185m >15  | <b>&lt;1</b> | <1       | <1       |
| Vanadium | ppm    | ASTM D5185m      | <b>0</b>     | <1       | 0        |
| Cadmium  | ppm    | ASTM D5185m      | <b>0</b>     | <1       | 0        |

## ADDITIVES

|            | method | limit/base       | current      | history1 | history2 |
|------------|--------|------------------|--------------|----------|----------|
| Boron      | ppm    | ASTM D5185m 0    | <b>4</b>     | <1       | 1        |
| Barium     | ppm    | ASTM D5185m 0    | <b>0</b>     | 0        | 0        |
| Molybdenum | ppm    | ASTM D5185m 60   | <b>58</b>    | 54       | 74       |
| Manganese  | ppm    | ASTM D5185m 0    | <b>&lt;1</b> | <1       | <1       |
| Magnesium  | ppm    | ASTM D5185m 1010 | <b>956</b>   | 876      | 1174     |
| Calcium    | ppm    | ASTM D5185m 1070 | <b>1041</b>  | 940      | 1232     |
| Phosphorus | ppm    | ASTM D5185m 1150 | <b>1112</b>  | 924      | 1218     |
| Zinc       | ppm    | ASTM D5185m 1270 | <b>1286</b>  | 1132     | 1477     |
| Sulfur     | ppm    | ASTM D5185m 2060 | <b>3433</b>  | 2774     | 3847     |

## CONTAMINANTS

|           | method | limit/base      | current  | history1 | history2 |
|-----------|--------|-----------------|----------|----------|----------|
| Silicon   | ppm    | ASTM D5185m >25 | <b>5</b> | 4        | 5        |
| Sodium    | ppm    | ASTM D5185m     | <b>6</b> | 4        | 0        |
| Potassium | ppm    | ASTM D5185m >20 | <b>6</b> | 2        | 3        |

## INFRA-RED

|           | method   | limit/base      | current     | history1 | history2 |
|-----------|----------|-----------------|-------------|----------|----------|
| Soot %    | %        | *ASTM D7844 >4  | <b>0.3</b>  | 0.3      | 0.2      |
| Nitration | Abs/cm   | *ASTM D7624 >20 | <b>8.7</b>  | 9.2      | 8.8      |
| Sulfation | Abs/.1mm | *ASTM D7415 >30 | <b>19.7</b> | 19.5     | 19.3     |

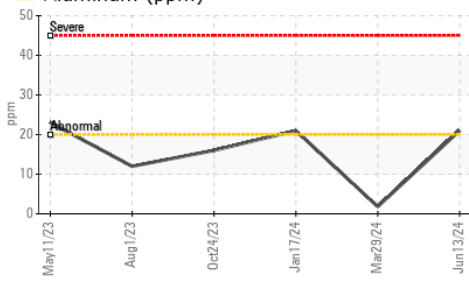
## FLUID DEGRADATION

|                  | method   | limit/base      | current     | history1 | history2 |
|------------------|----------|-----------------|-------------|----------|----------|
| Oxidation        | Abs/.1mm | *ASTM D7414 >25 | <b>16.3</b> | 16.7     | 16.2     |
| Base Number (BN) | mg KOH/g | ASTM D2896 9.8  | <b>6.3</b>  | 6.5      | 6.8      |

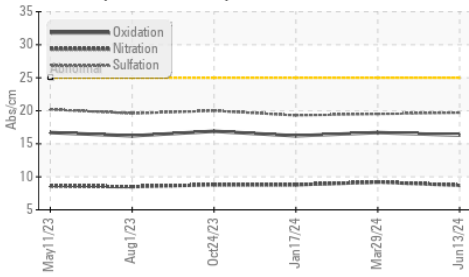


# OIL ANALYSIS REPORT

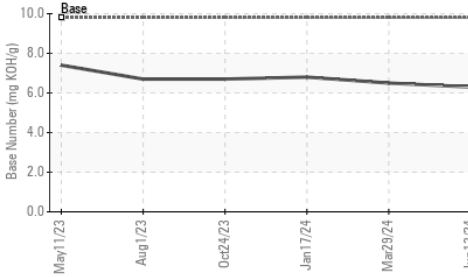
### ▲ Aluminum (ppm)



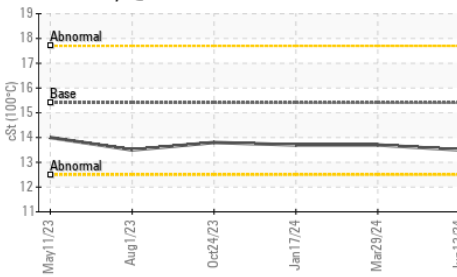
### FT-IR (Direct Trend)



### Base Number



### Viscosity @ 100°C



## VISUAL

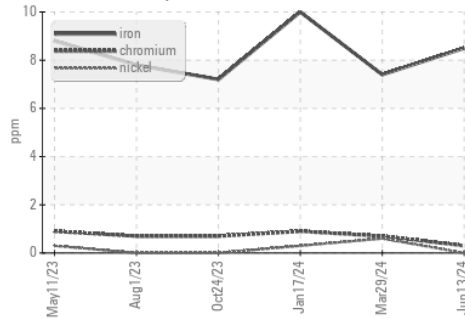
|                  | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| White Metal      | scalar | *Visual    | NONE    | NONE     | NONE     |
| Yellow Metal     | scalar | *Visual    | NONE    | NONE     | NONE     |
|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

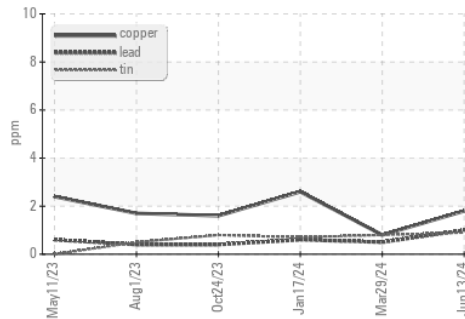
|              | method | limit/base | current | history1 | history2 |
|--------------|--------|------------|---------|----------|----------|
| Visc @ 100°C | cSt    | ASTM D445  | 15.4    | 13.5     | 13.7     |

## GRAPHS

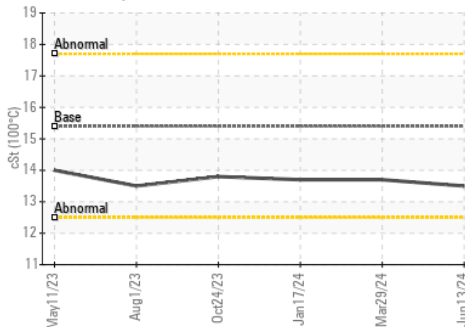
### Ferrous Alloys



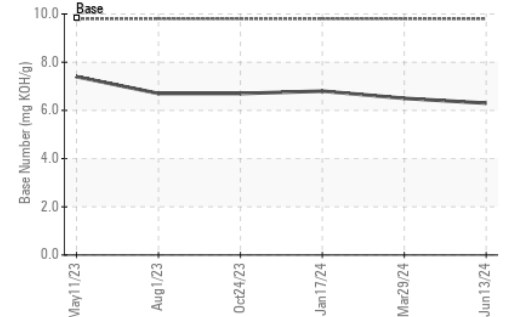
### Non-ferrous Metals



### Viscosity @ 100°C



### Base Number



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : GFL0123778  
**Lab Number** : 06216696  
**Unique Number** : 11089560  
**Test Package** : FLEET

**Received** : 21 Jun 2024  
**Tested** : 24 Jun 2024  
**Diagnosed** : 24 Jun 2024 - Sean Felton

**GFL Environmental - 918 - Hartland HC**  
 630 E Industrial Drive  
 Hartland, WI  
 US 53029  
 Contact: David McCall  
 david.mccall@gflenv.com  
 T: (262)369-3069  
 F:

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)