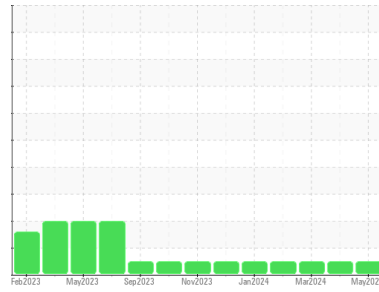




# OIL ANALYSIS REPORT

Sample Rating Trend



**NORMAL**



Machine Id

**413027**

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 |             | <b>GFL0123032</b>  | GFL0115395  | GFL0115360  |
| Sample Date   | Client Info |             | <b>28 May 2024</b> | 04 Apr 2024 | 11 Mar 2024 |
| Machine Age   | hrs         | Client Info | <b>1641</b>        | 1468        | 1285        |
| Oil Age       | hrs         | Client Info | <b>173</b>         | 183         | 150         |
| Oil Changed   | Client Info |             | <b>Changed</b>     | Changed     | Changed     |
| Sample Status |             |             | <b>NORMAL</b>      | NORMAL      | NORMAL      |

## CONTAMINATION

|        | method    | limit/base | current        | history1 | history2 |
|--------|-----------|------------|----------------|----------|----------|
| Fuel   | WC Method | >5         | <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 >100 | <b>18</b>    | 12       | 10       |
| Chromium | ppm    | ASTM D5185m >20  | <b>1</b>     | <1       | <1       |
| Nickel   | ppm    | ASTM D5185m >4   | <b>7</b>     | 6        | 4        |
| Titanium | ppm    | ASTM D5185m      | <b>&lt;1</b> | 0        | 0        |
| Silver   | ppm    | ASTM D5185m >3   | <b>&lt;1</b> | <1       | 0        |
| Aluminum | ppm    | ASTM D5185m >20  | <b>6</b>     | 5        | 3        |
| Lead     | ppm    | ASTM D5185m >40  | <b>&lt;1</b> | <1       | <1       |
| Copper   | ppm    | ASTM D5185m >330 | <b>80</b>    | 70       | 53       |
| Tin      | ppm    | ASTM D5185m >15  | <b>2</b>     | 1        | <1       |
| Vanadium | ppm    | ASTM D5185m      | <b>&lt;1</b> | 0        | 0        |
| Cadmium  | ppm    | ASTM D5185m      | <b>&lt;1</b> | 0        | 0        |

## ADDITIVES

|            | method | limit/base       | current      | history1 | history2 |
|------------|--------|------------------|--------------|----------|----------|
| Boron      | ppm    | ASTM D5185m 0    | <b>4</b>     | 4        | 8        |
| Barium     | ppm    | ASTM D5185m 0    | <b>&lt;1</b> | 0        | 0        |
| Molybdenum | ppm    | ASTM D5185m 60   | <b>60</b>    | 57       | 64       |
| Manganese  | ppm    | ASTM D5185m 0    | <b>&lt;1</b> | <1       | <1       |
| Magnesium  | ppm    | ASTM D5185m 1010 | <b>915</b>   | 905      | 998      |
| Calcium    | ppm    | ASTM D5185m 1070 | <b>1085</b>  | 1074     | 1210     |
| Phosphorus | ppm    | ASTM D5185m 1150 | <b>1046</b>  | 978      | 1117     |
| Zinc       | ppm    | ASTM D5185m 1270 | <b>1202</b>  | 1208     | 1310     |
| Sulfur     | ppm    | ASTM D5185m 2060 | <b>2494</b>  | 3159     | 3923     |

## CONTAMINANTS

|           | method | limit/base      | current   | history1 | history2 |
|-----------|--------|-----------------|-----------|----------|----------|
| Silicon   | ppm    | ASTM D5185m >25 | <b>7</b>  | 5        | 5        |
| Sodium    | ppm    | ASTM D5185m     | <b>4</b>  | 4        | 2        |
| Potassium | ppm    | ASTM D5185m >20 | <b>17</b> | 13       | 8        |

## INFRA-RED

|           | method   | limit/base      | current     | history1 | history2 |
|-----------|----------|-----------------|-------------|----------|----------|
| Soot %    | %        | *ASTM D7844 >3  | <b>0.3</b>  | 0.3      | 0.2      |
| Nitration | Abs/cm   | *ASTM D7624 >20 | <b>9.2</b>  | 8.0      | 6.9      |
| Sulfation | Abs/.1mm | *ASTM D7415 >30 | <b>20.2</b> | 19.7     | 18.9     |

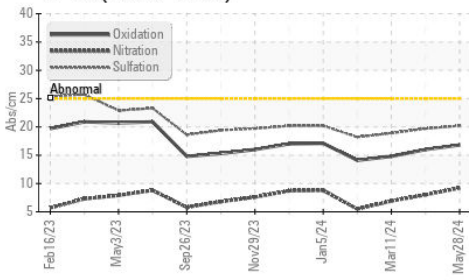
## FLUID DEGRADATION

|                  | method   | limit/base      | current     | history1 | history2 |
|------------------|----------|-----------------|-------------|----------|----------|
| Oxidation        | Abs/.1mm | *ASTM D7414 >25 | <b>16.8</b> | 16.0     | 14.8     |
| Base Number (BN) | mg KOH/g | ASTM D2896 9.8  | <b>6.7</b>  | 6.9      | 8.0      |

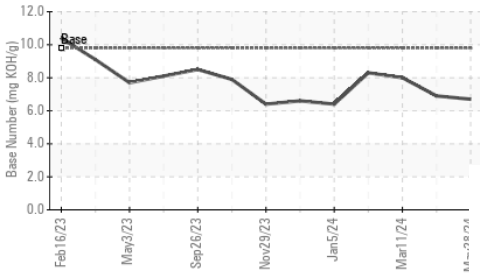


# OIL ANALYSIS REPORT

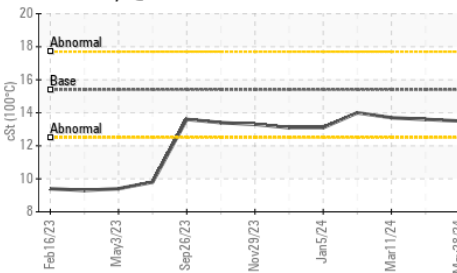
FT-IR (Direct Trend)



Base Number



Viscosity @ 100°C

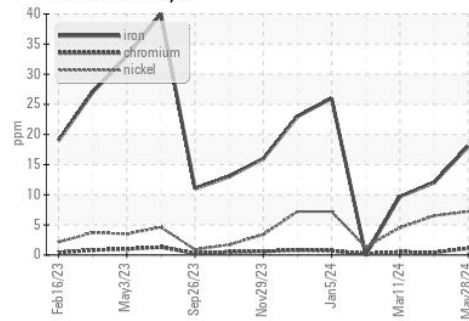


| PARAMETER        | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| White Metal      | scalar | *Visual    | NONE    | NONE     | NONE     |
| Yellow Metal     | scalar | *Visual    | NONE    | NONE     | NONE     |
|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

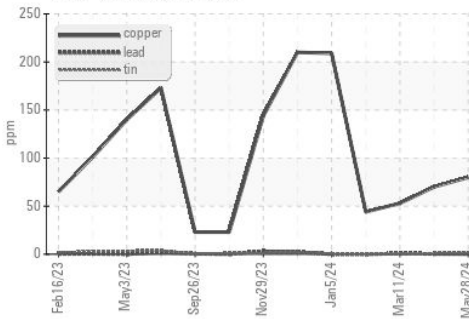
| FLUID PROPERTIES | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| Visc @ 100°C     | cSt    | ASTM D445  | 15.4    | 13.5     | 13.6     |

## GRAPHS

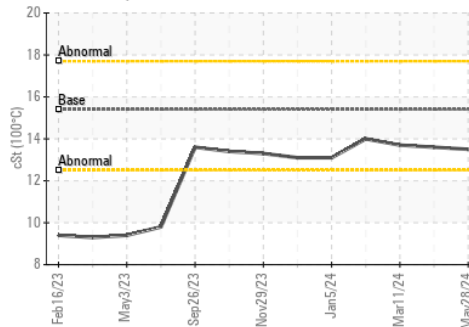
Ferrous Alloys



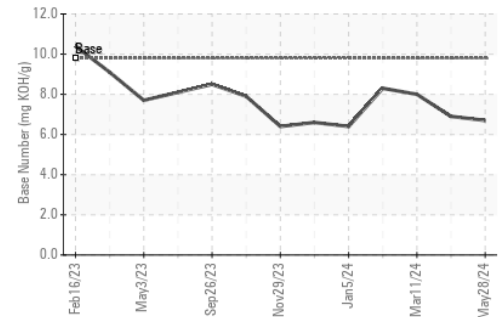
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : GFL0123032  
**Lab Number** : 06212940  
**Unique Number** : 11085804  
**Test Package** : FLEET

**GFL Environmental - 814 - Little Rock Hauling**  
 4005 Hwy 161 N.  
 Little Rock, AR  
 US 72117

Contact: Brad Koenig  
 bkoenig@gflenv.com

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)

T:  
F: