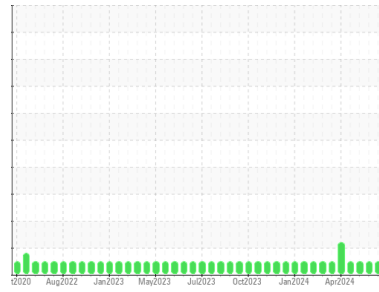




# OIL ANALYSIS REPORT

Sample Rating Trend



**NORMAL**



Machine Id

**429048**

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>GFL0124069</b>  | GFL0117219  | GFL0117243  |
| Sample Date   | Client Info |             | <b>24 Jun 2024</b> | 17 May 2024 | 01 May 2024 |
| Machine Age   | hrs         | Client Info | <b>18321</b>       | 18184       | 18040       |
| Oil Age       | hrs         | Client Info | <b>0</b>           | 0           | 600         |
| Oil Changed   | Client Info |             | <b>Not Changed</b> | Not Changd  | 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 >90  | <b>8</b>     | 5        | 21       |
| Chromium | ppm    | ASTM D5185m >20  | <b>&lt;1</b> | 0        | 0        |
| Nickel   | ppm    | ASTM D5185m >2   | <b>0</b>     | 0        | 0        |
| Titanium | ppm    | ASTM D5185m >2   | <b>&lt;1</b> | 0        | 0        |
| Silver   | ppm    | ASTM D5185m >2   | <b>0</b>     | 0        | 0        |
| Aluminum | ppm    | ASTM D5185m >20  | <b>2</b>     | 2        | <1       |
| Lead     | ppm    | ASTM D5185m >40  | <b>&lt;1</b> | <1       | <1       |
| Copper   | ppm    | ASTM D5185m >330 | <b>2</b>     | 2        | 1        |
| Tin      | ppm    | ASTM D5185m >15  | <b>0</b>     | <1       | <1       |
| Vanadium | ppm    | ASTM D5185m      | <b>&lt;1</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>5</b>     | 6        | 0        |
| Barium     | ppm    | ASTM D5185m 0    | <b>0</b>     | 0        | 0        |
| Molybdenum | ppm    | ASTM D5185m 60   | <b>57</b>    | 59       | 63       |
| Manganese  | ppm    | ASTM D5185m 0    | <b>&lt;1</b> | <1       | 0        |
| Magnesium  | ppm    | ASTM D5185m 1010 | <b>960</b>   | 914      | 997      |
| Calcium    | ppm    | ASTM D5185m 1070 | <b>1190</b>  | 1089     | 1257     |
| Phosphorus | ppm    | ASTM D5185m 1150 | <b>1060</b>  | 1040     | 1125     |
| Zinc       | ppm    | ASTM D5185m 1270 | <b>1317</b>  | 1227     | 1396     |
| Sulfur     | ppm    | ASTM D5185m 2060 | <b>3623</b>  | 3569     | 3811     |

## CONTAMINANTS

|           | method | limit/base      | current  | history1 | history2 |
|-----------|--------|-----------------|----------|----------|----------|
| Silicon   | ppm    | ASTM D5185m >25 | <b>6</b> | 6        | 5        |
| Sodium    | ppm    | ASTM D5185m     | <b>1</b> | 2        | 3        |
| Potassium | ppm    | ASTM D5185m >20 | <b>4</b> | 2        | 0        |

## INFRA-RED

|           | method   | limit/base      | current     | history1 | history2 |
|-----------|----------|-----------------|-------------|----------|----------|
| Soot %    | %        | *ASTM D7844 >6  | <b>0.5</b>  | 0.4      | 0.9      |
| Nitration | Abs/cm   | *ASTM D7624 >20 | <b>8.8</b>  | 7.0      | 10.3     |
| Sulfation | Abs/.1mm | *ASTM D7415 >30 | <b>20.6</b> | 19.1     | 21.2     |

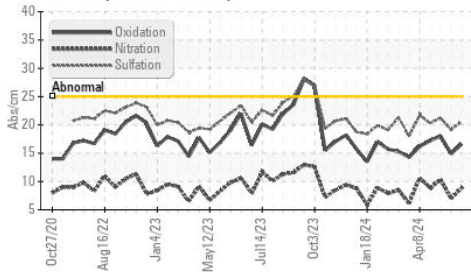
## FLUID DEGRADATION

|                  | method   | limit/base      | current     | history1 | history2 |
|------------------|----------|-----------------|-------------|----------|----------|
| Oxidation        | Abs/.1mm | *ASTM D7414 >25 | <b>16.6</b> | 14.9     | 18.0     |
| Base Number (BN) | mg KOH/g | ASTM D2896 9.8  | <b>8.5</b>  | 8.3      | 8.2      |

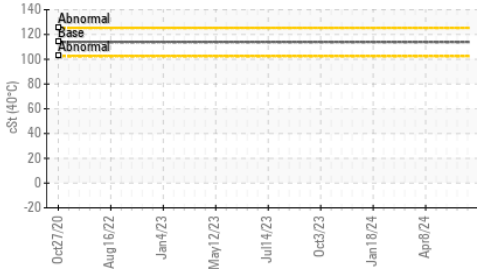


# OIL ANALYSIS REPORT

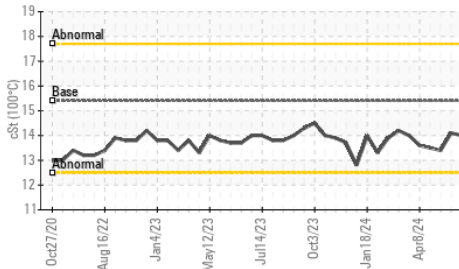
FT-IR (Direct Trend)



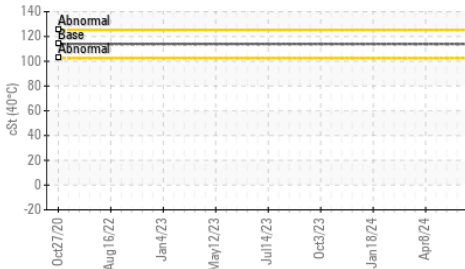
Viscosity @ 40°C



Viscosity @ 100°C



Viscosity @ 40°C

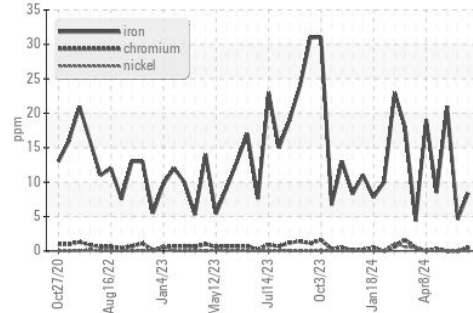


| VISUAL           | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| White Metal      | scalar | *Visual    | NONE    | NONE     | NONE     |
| Yellow Metal     | scalar | *Visual    | NONE    | NONE     | NONE     |
|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

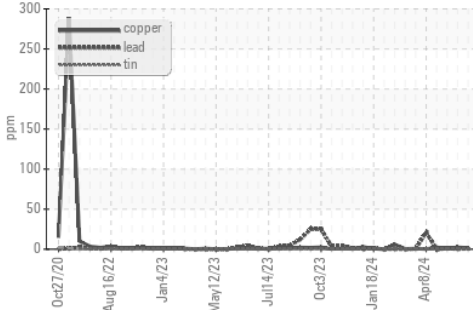
| FLUID PROPERTIES | method | limit/base | current | history1    | history2 |
|------------------|--------|------------|---------|-------------|----------|
| Visc @ 100°C     | cSt    | ASTM D445  | 15.4    | <b>14.0</b> | 14.1     |

## GRAPHS

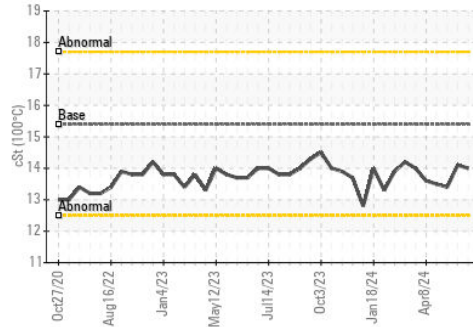
Ferrous Alloys



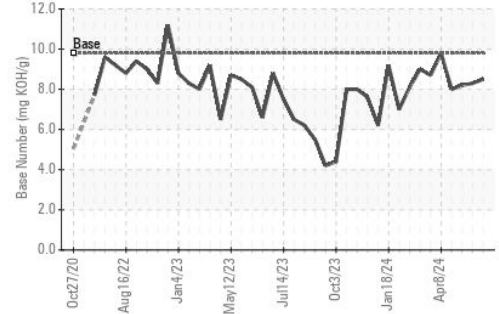
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : GFL0124069

Lab Number : 06223333

Unique Number : 11101530

Test Package : FLEET ( Additional Tests: KV40 )

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)

Received : 28 Jun 2024

Tested : 01 Jul 2024

Diagnosed : 01 Jul 2024 - Don Baldrige

GFL Environmental - 836 - Kansas City Hauling

7801 East Truman Road

Kansas City, MO

US 64126

Contact: Loyce Stewart

loyce.stewart@gflen.com

T:

F: