

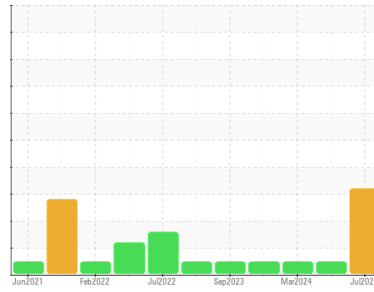


# OIL ANALYSIS REPORT



Machine Id  
**423011-4659**  
 Component  
**Diesel Engine**  
 Fluid  
**PETRO CANADA DURON SHP 15W40 (--- LTR)**

Sample Rating Trend



## DIAGNOSIS

### Recommendation

We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Resample at the next service interval to monitor.

### Wear

Piston, ring and cylinder wear is indicated.

### Contamination

Elemental level of silicon (Si) above normal indicating ingress of seal material.

### Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

## SAMPLE INFORMATION

| method        | limit/base  | current            | history1    | history2    |
|---------------|-------------|--------------------|-------------|-------------|
| Sample Number | Client Info | <b>GFL0110417</b>  | GFL0091898  | GFL0112758  |
| Sample Date   | Client Info | <b>10 Jul 2024</b> | 31 May 2024 | 02 Mar 2024 |
| Machine Age   | hrs         | <b>37334</b>       | 37115       | 36960       |
| Oil Age       | hrs         | <b>382</b>         | 37115       | 34985       |
| Oil Changed   | Client Info | <b>Not Chngd</b>   | Not Chngd   | Not Chngd   |
| 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>▲ 118</b> | 2        | 2        |
| Chromium | ppm ASTM D5185m >20  | <b>8</b>     | <1       | 0        |
| Nickel   | ppm ASTM D5185m >5   | <b>&lt;1</b> | 0        | 0        |
| Titanium | ppm ASTM D5185m >2   | <b>&lt;1</b> | <1       | 0        |
| Silver   | ppm ASTM D5185m >2   | <b>0</b>     | 0        | 0        |
| Aluminum | ppm ASTM D5185m >20  | <b>▲ 45</b>  | 3        | 1        |
| Lead     | ppm ASTM D5185m >40  | <b>0</b>     | <1       | 0        |
| Copper   | ppm ASTM D5185m >330 | <b>40</b>    | <1       | 0        |
| Tin      | ppm ASTM D5185m >15  | <b>6</b>     | <1       | 0        |
| 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>53</b>   | 1        | 0        |
| Barium     | ppm ASTM D5185m 0    | <b>0</b>    | 0        | 0        |
| Molybdenum | ppm ASTM D5185m 60   | <b>87</b>   | 58       | 57       |
| Manganese  | ppm ASTM D5185m 0    | <b>4</b>    | 0        | <1       |
| Magnesium  | ppm ASTM D5185m 1010 | <b>675</b>  | 905      | 945      |
| Calcium    | ppm ASTM D5185m 1070 | <b>1314</b> | 1135     | 1008     |
| Phosphorus | ppm ASTM D5185m 1150 | <b>1014</b> | 1111     | 1032     |
| Zinc       | ppm ASTM D5185m 1270 | <b>1239</b> | 1193     | 1207     |
| Sulfur     | ppm ASTM D5185m 2060 | <b>3277</b> | 3417     | 2953     |

## CONTAMINANTS

| method    | limit/base          | current     | history1 | history2 |
|-----------|---------------------|-------------|----------|----------|
| Silicon   | ppm ASTM D5185m >25 | <b>▲ 30</b> | 4        | 4        |
| Sodium    | ppm ASTM D5185m     | <b>51</b>   | 0        | 0        |
| Potassium | ppm ASTM D5185m >20 | <b>18</b>   | 3        | 0        |

## INFRA-RED

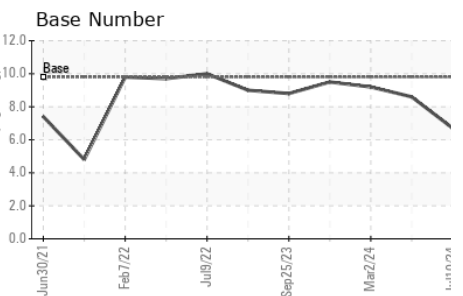
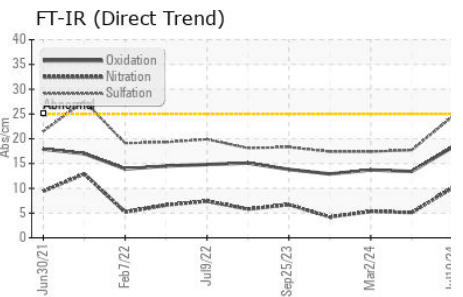
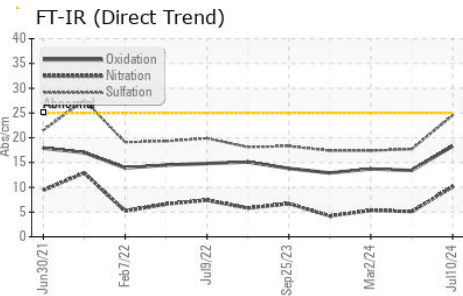
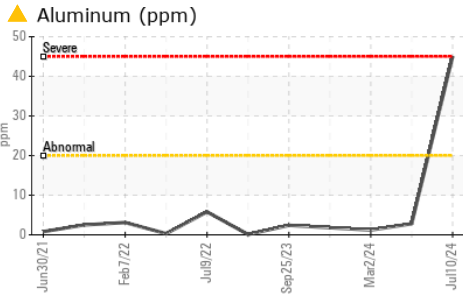
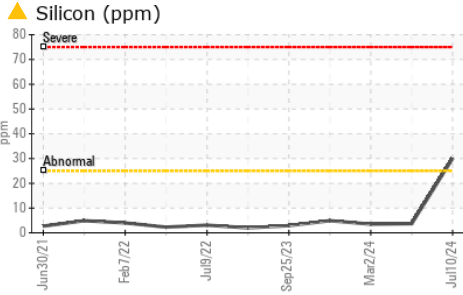
| method    | limit/base               | current     | history1 | history2 |
|-----------|--------------------------|-------------|----------|----------|
| Soot %    | % *ASTM D7844 >4         | <b>1.2</b>  | 0.1      | 0.1      |
| Nitration | Abs/cm *ASTM D7624 >20   | <b>10.1</b> | 5.1      | 5.3      |
| Sulfation | Abs/.1mm *ASTM D7415 >30 | <b>24.5</b> | 17.7     | 17.4     |

## FLUID DEGRADATION

| method           | limit/base               | current     | history1 | history2 |
|------------------|--------------------------|-------------|----------|----------|
| Oxidation        | Abs/.1mm *ASTM D7414 >25 | <b>18.3</b> | 13.4     | 13.7     |
| Base Number (BN) | mg KOH/g ASTM D2896 9.8  | <b>6.7</b>  | 8.6      | 9.2      |



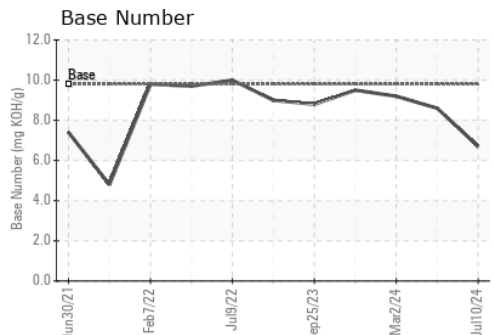
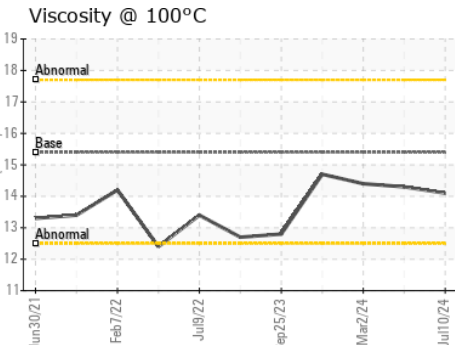
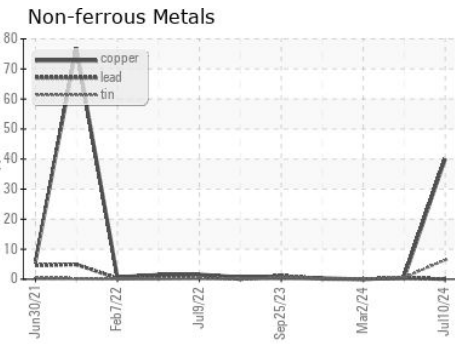
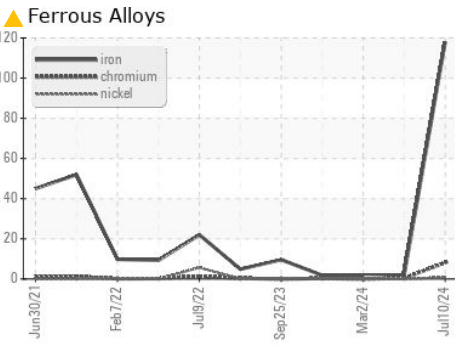
# OIL ANALYSIS REPORT



| 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    | 14.1     | 14.3     | 14.4 |

## GRAPHS



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : GFL0110417  
**Lab Number** : 06238784  
**Unique Number** : 11127618  
**Test Package** : FLEET

**Received** : 17 Jul 2024  
**Tested** : 17 Jul 2024  
**Diagnosed** : 18 Jul 2024 - Sean Felton

**GFL Environmental - 044 - Elizabeth City**  
 657 Old US 17  
 Elizabeth City, NC  
 US 27909  
 Contact: TOM BAIRD  
 tom.baird@gflenv.com  
 T: (252)562-2645  
 F: (252)264-4411

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)