

Machine Id  
**422006**  
Component  
**Diesel Engine**  
Fluid  
**PETRO CANADA DURON SHP 15W40 (--- GAL)**

**RECOMMENDATION**

We advise that you check for the source of the coolant leak. We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

| Test           | UOM | Method      | Limit/Abn | Current            | History1    | History2    |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number  |     | Client Info |           | <b>GFL0080092</b>  | GFL0095037  | GFL0044750  |
| Sample Date    |     | Client Info |           | <b>30 Apr 2024</b> | 15 Nov 2023 | 24 Mar 2023 |
| Machine Age    | hrs | Client Info |           | <b>28515</b>       | 28358       | 27733       |
| Oil Age        | hrs | Client Info |           | <b>600</b>         | 600         | 600         |
| Filter Age     | hrs | Client Info |           | <b>600</b>         | 600         | 600         |
| Oil Changed    |     | Client Info |           | <b>Changed</b>     | Changed     | Changed     |
| Filter Changed |     | Client Info |           | <b>Changed</b>     | Changed     | Changed     |
| Sample Status  |     |             |           | <b>SEVERE</b>      | ABNORMAL    | NORMAL      |

**WEAR**

All component wear rates are normal.

|              |        |               |      |              |      |     |
|--------------|--------|---------------|------|--------------|------|-----|
| Iron         | ppm    | ASTM D5185(m) | >100 | <b>23</b>    | 16   | 27  |
| Chromium     | ppm    | ASTM D5185(m) | >20  | <b>&lt;1</b> | <1   | <1  |
| Nickel       | ppm    | ASTM D5185(m) | >4   | <b>0</b>     | <1   | <1  |
| Titanium     | ppm    | ASTM D5185(m) |      | <b>0</b>     | 0    | <1  |
| Silver       | ppm    | ASTM D5185(m) | >3   | <b>0</b>     | 0    | 0   |
| Aluminum     | ppm    | ASTM D5185(m) | >20  | <b>1</b>     | 2    | 2   |
| Lead         | ppm    | ASTM D5185(m) | >40  | <b>2</b>     | 4    | <1  |
| Copper       | ppm    | ASTM D5185(m) | >330 | <b>10</b>    | 6    | 2   |
| Tin          | ppm    | ASTM D5185(m) | >15  | <b>&lt;1</b> | <1   | 0   |
| Vanadium     | ppm    | ASTM D5185(m) |      | <b>0</b>     | 0    | 0   |
| White Metal  | scalar | Visual*       | NONE | <b>NONE</b>  | NONE | --- |
| Yellow Metal | scalar | Visual*       | NONE | <b>NONE</b>  | NONE | --- |

**CONTAMINATION**

Test for glycol is positive. There is a high concentration of glycol present in the oil. There is a moderate concentration of dirt present in the oil.

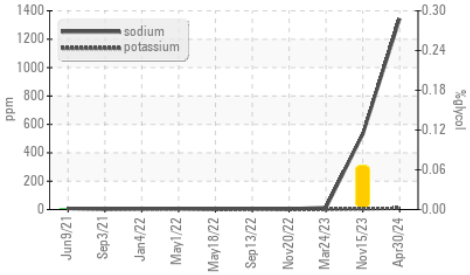
|                  |          |               |       |                  |                |       |
|------------------|----------|---------------|-------|------------------|----------------|-------|
| Silicon          | ppm      | ASTM D5185(m) | >25   | <b>▲ 37</b>      | 25             | 7     |
| Potassium        | ppm      | ASTM D5185(m) | >20   | <b>▲ 9</b>       | 4              | <1    |
| Fuel             |          | WC Method     | >5    | <b>&lt;1.0</b>   | <1.0           | <1.0  |
| Water            |          | WC Method     | >0.2  | <b>NEG</b>       | NEG            | NEG   |
| Glycol           | %        | ASTM D7922*   |       | <b>▲ &gt;.70</b> | <b>▲ 0.067</b> | NEG   |
| Soot %           | %        | ASTM D7844*   | >3    | <b>0</b>         | 0.1            | 0.2   |
| Nitration        | Abs/cm   | ASTM D7624*   | >20   | <b>9.4</b>       | 8.5            | 8.8   |
| Sulfation        | Abs/.1mm | ASTM D7415*   | >30   | <b>19.5</b>      | 19.6           | 22.7  |
| Silt             | scalar   | Visual*       | NONE  | <b>NONE</b>      | NONE           | ---   |
| Debris           | scalar   | Visual*       | NONE  | <b>VLITE</b>     | NONE           | ---   |
| Sand/Dirt        | scalar   | Visual*       | NONE  | <b>NONE</b>      | NONE           | ---   |
| Appearance       | scalar   | Visual*       | NORML | <b>NORML</b>     | NORML          | ---   |
| Odor             | scalar   | Visual*       | NORML | <b>NORML</b>     | NORML          | NORML |
| Emulsified Water | scalar   | Visual*       | >0.2  | <b>NEG</b>       | NEG            | NEG   |

**FLUID CONDITION**

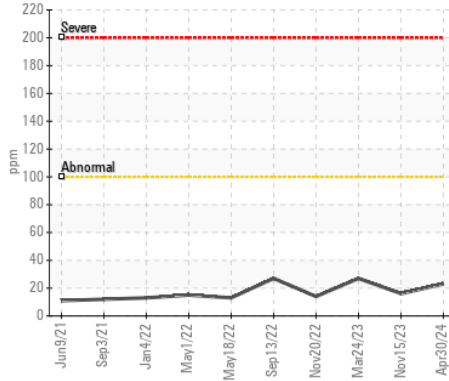
The oil is no longer serviceable due to the presence of contaminants.

|              |          |               |      |               |              |      |
|--------------|----------|---------------|------|---------------|--------------|------|
| Sodium       | ppm      | ASTM D5185(m) |      | <b>● 1344</b> | <b>● 531</b> | 14   |
| Boron        | ppm      | ASTM D5185(m) | 0    | <b>111</b>    | 9            | 3    |
| Barium       | ppm      | ASTM D5185(m) | 0    | <b>&lt;1</b>  | 0            | 0    |
| Molybdenum   | ppm      | ASTM D5185(m) | 60   | <b>93</b>     | 51           | 64   |
| Manganese    | ppm      | ASTM D5185(m) | 0    | <b>&lt;1</b>  | <1           | <1   |
| Magnesium    | ppm      | ASTM D5185(m) | 1010 | <b>866</b>    | 802          | 1039 |
| Calcium      | ppm      | ASTM D5185(m) | 1070 | <b>950</b>    | 944          | 1176 |
| Phosphorus   | ppm      | ASTM D5185(m) | 1150 | <b>942</b>    | 853          | 1135 |
| Zinc         | ppm      | ASTM D5185(m) | 1270 | <b>1094</b>   | 996          | 1282 |
| Sulfur       | ppm      | ASTM D5185(m) | 2060 | <b>2397</b>   | 2409         | 2663 |
| Oxidation    | Abs/.1mm | ASTM D7414*   | >25  | <b>12.3</b>   | 14.2         | 15.6 |
| Visc @ 100°C | cSt      | ASTM D7279(m) | 15.4 | <b>15.2</b>   | 15.4         | 14.0 |

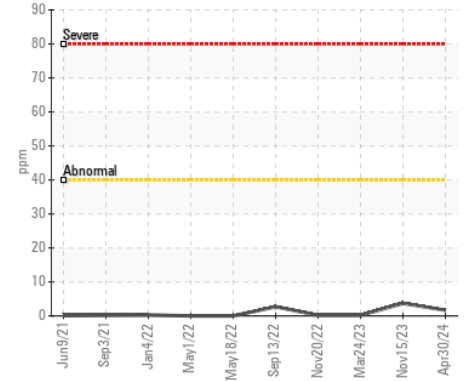
**▲ Glycol Contamination**



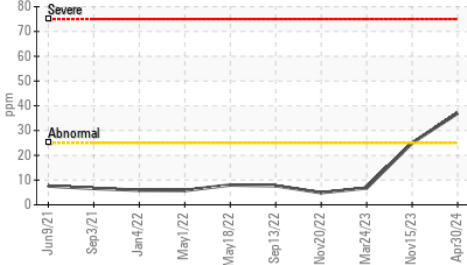
**Iron (ppm)**



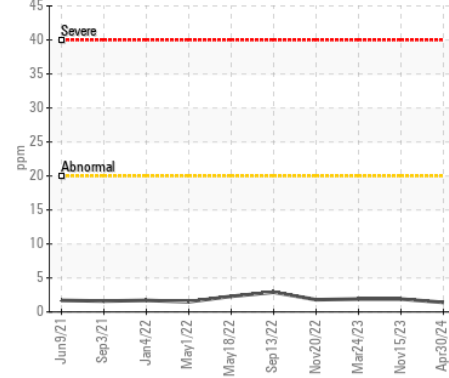
**Lead (ppm)**



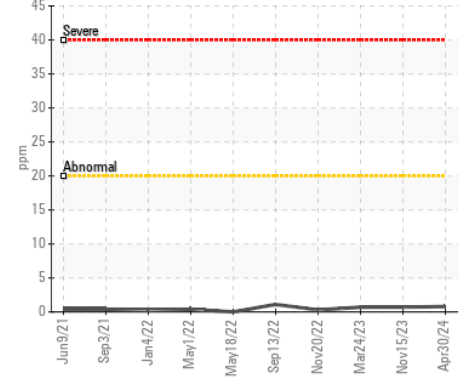
**▲ Silicon (ppm)**



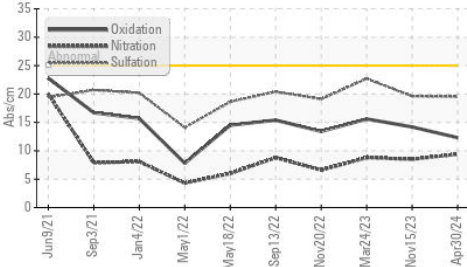
**Aluminum (ppm)**



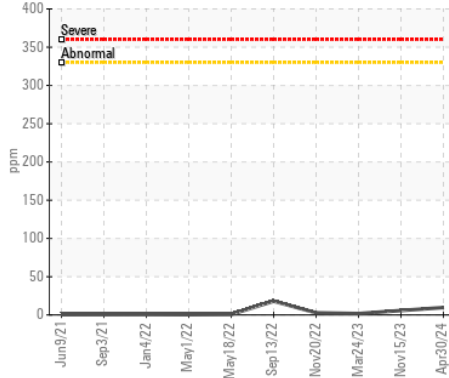
**Chromium (ppm)**



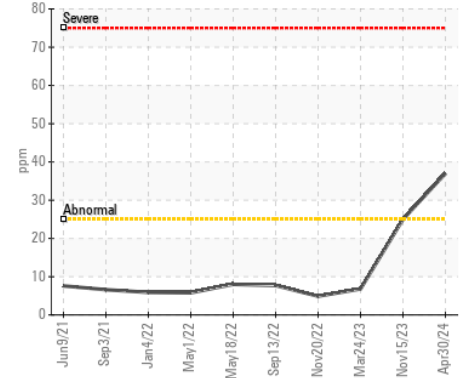
**FT-IR (Direct Trend)**



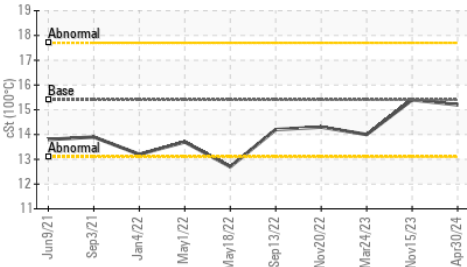
**Copper (ppm)**



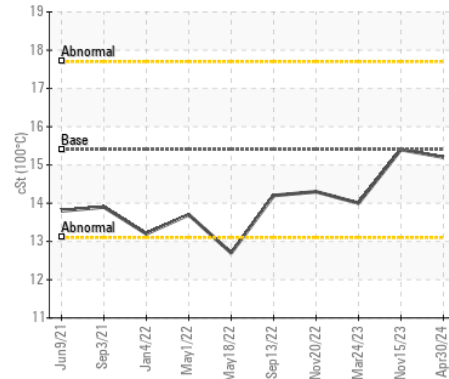
**▲ Silicon (ppm)**



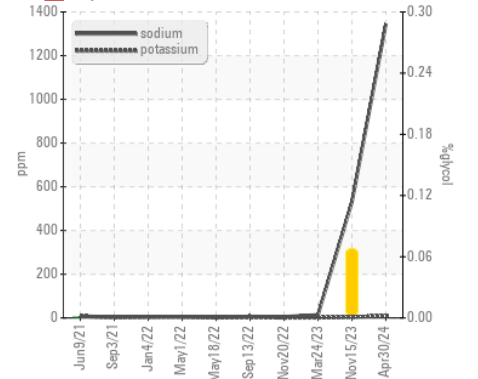
**Viscosity @ 100°C**



**Viscosity @ 100°C**



**▲ Glycol Contamination**



**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : GFL0080092  
**Lab Number** : 02636841  
**Unique Number** : 5786003  
**Test Package** : MOB 1 ( Additional Tests: Visual )

**GFL Environmental - 577 - First Class**  
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To discuss this sample report, contact Customer Service at 1-800-268-2131.  
 Test denoted (\*) outside scope of accreditation, (m) method modified, (e) tested at external lab.  
 Validity of results and interpretation are based on the sample and information as supplied.