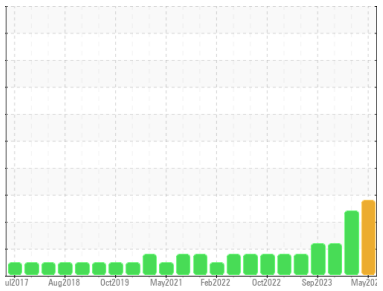
# OIL ANALYSIS REPORT

Sample Rating Trend



FUEL

Machine Id
**8422**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (20 LTR)**

## DIAGNOSIS

**▲ Recommendation**
We advise that you check the fuel injection system. The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

**Wear**
Metal levels are typical for a new component breaking in.

**▲ Contamination**
There is a high amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

**▲ Fluid Condition**
Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable due to the presence of contaminants.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **GFL0116854** | GFL0110713 | GFL0097436 |
| Sample Date | | Client Info | | **30 May 2024** | 29 Feb 2024 | 04 Jan 2024 |
| Machine Age | hrs | Client Info | | **535** | 535 | 535 |
| Oil Age | hrs | Client Info | | **535** | 535 | 535 |
| Oil Changed | | Client Info | | **Changed** | Changed | Changed |
| Sample Status | | | | **SEVERE** | SEVERE | ABNORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Water | | WC Method | >0.2 | **NEG** | NEG | NEG |
| Glycol | | WC Method | | **NEG** | NEG | NEG |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185(m) | >100 | **29** | 11 | 6 |
| Chromium | ppm | ASTM D5185(m) | >20 | **1** | <1 | <1 |
| Nickel | ppm | ASTM D5185(m) | >4 | **0** | 0 | <1 |
| Titanium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185(m) | >3 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185(m) | >20 | **<1** | 1 | 1 |
| Lead | ppm | ASTM D5185(m) | >40 | **0** | <1 | 0 |
| Copper | ppm | ASTM D5185(m) | >330 | **<1** | <1 | <1 |
| Tin | ppm | ASTM D5185(m) | >15 | **0** | 0 | 0 |
| Antimony | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Vanadium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Beryllium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |

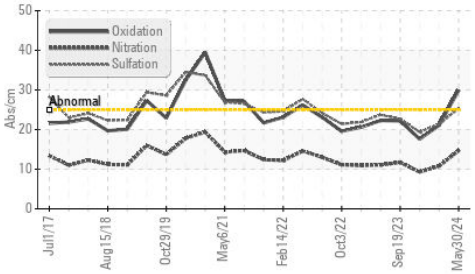
| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185(m) | 0 | **3** | 1 | 2 |
| Barium | ppm | ASTM D5185(m) | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185(m) | 60 | **45** | 50 | 52 |
| Manganese | ppm | ASTM D5185(m) | 0 | **<1** | 0 | 0 |
| Magnesium | ppm | ASTM D5185(m) | 1010 | **730** | 820 | 842 |
| Calcium | ppm | ASTM D5185(m) | 1070 | **807** | 890 | 925 |
| Phosphorus | ppm | ASTM D5185(m) | 1150 | **743** | 874 | 900 |
| Zinc | ppm | ASTM D5185(m) | 1270 | **899** | 1019 | 1046 |
| Sulfur | ppm | ASTM D5185(m) | 2060 | **1780** | 2266 | 2351 |
| Lithium | ppm | ASTM D5185(m) | | **<1** | <1 | <1 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >25 | **4** | 4 | 7 |
| Sodium | ppm | ASTM D5185(m) | | **2** | 1 | <1 |
| Potassium | ppm | ASTM D5185(m) | >20 | **<1** | <1 | <1 |
| Fuel | % | ASTM D7593* | >5 | **▲ 17.5** | ▲ 10.1 | ▲ 6.9 |

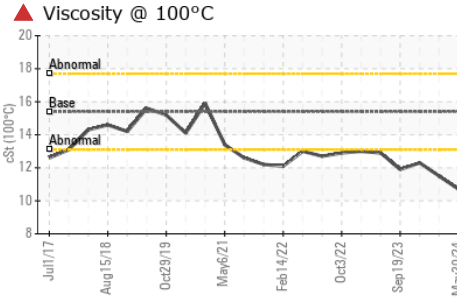
| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | ASTM D7844* | >3 | **0.5** | 0.2 | 0.1 |
| Nitration | Abs/cm | ASTM D7624* | >20 | **14.7** | 10.8 | 9.3 |
| Sulfation | Abs/.1mm | ASTM D7415* | >30 | **25.4** | 21.3 | 19.4 |

# OIL ANALYSIS REPORT

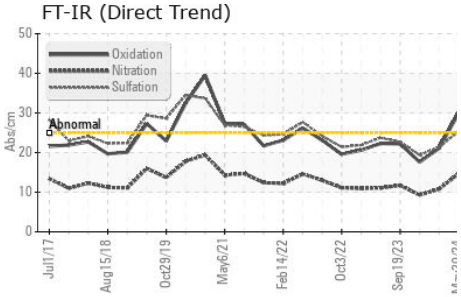
FT-IR (Direct Trend)




▲ Viscosity @ 100°C




FT-IR (Direct Trend)



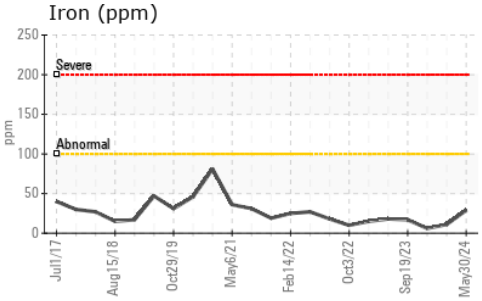

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | ASTM D7414* | >25 | **29.9** | 21.1 | 17.6 |

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Emulsified Water | scalar | Visual* | >0.2 | **NEG** | NEG | NEG |
| Free Water | scalar | Visual* | | **NEG** | NEG | NEG |

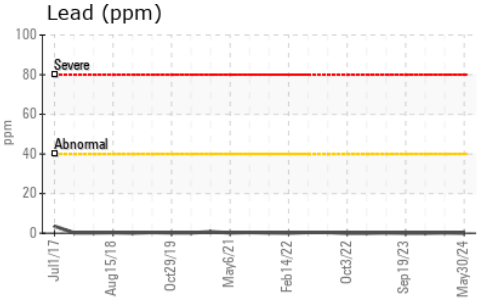
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D7279(m) | 15.4 | ▲ **10.7** | ▲ 11.5 | ▲ 12.3 |

## GRAPHS

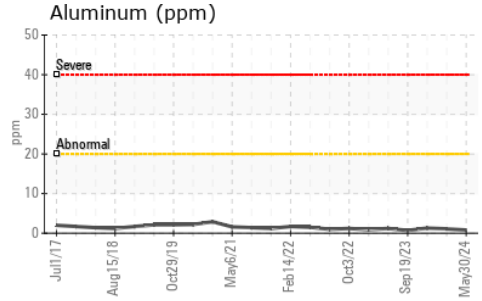
Iron (ppm)



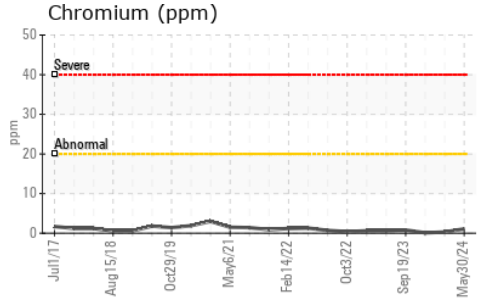

Lead (ppm)



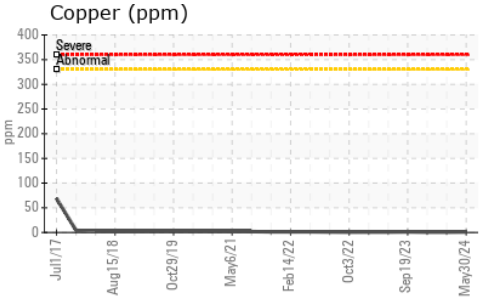

Aluminum (ppm)



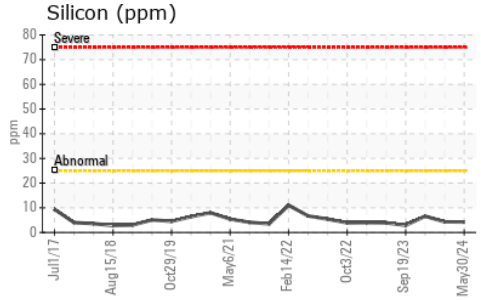

Chromium (ppm)



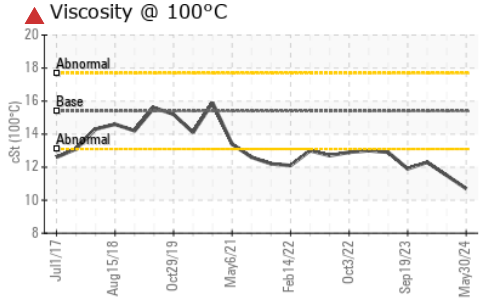

Copper (ppm)



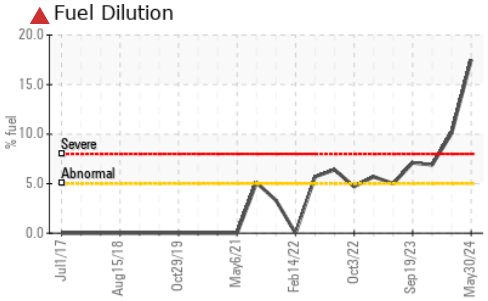

Silicon (ppm)




▲ Viscosity @ 100°C




▲ Fuel Dilution




ISO 17025:2017 Accredited Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
**Sample No.** : GFL0116854
**Lab Number** : 02639333
**Unique Number** : 5788495
**Test Package** : MOB 1 ( Additional Tests: PercentFuel )

**Received** : 03 Jun 2024
**Tested** : 04 Jun 2024
**Diagnosed** : 04 Jun 2024 - Kevin Marson

*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.*

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