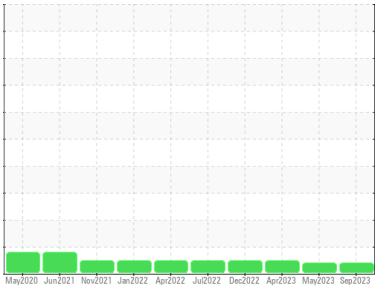
# OIL ANALYSIS REPORT

Machine Id
**924002**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (--- GAL)**

Sample Rating Trend




**VISCOSITY**

## DIAGNOSIS

**Recommendation**

No corrective action is recommended at this time. Confirm the source of the lubricant being utilized for top-up/fill. Resample at the next service interval to monitor. The fluid was specified as PETRO CANADA DURON SHP 15W40, however, a fluid match indicates that this fluid is SAE 30 Diesel Engine Oil. Please confirm the oil type and grade on your next sample.

**Wear**

All component wear rates are normal.

**Contamination**

Light fuel dilution occurring. No other contaminants were detected in the oil.

**Fluid Condition**

Viscosity of sample indicates oil is within SAE 30 range, advise investigate. This plus the additive levels indicates that this is not the same brand, or type of oil as reported. The condition of the oil is acceptable for the time in service.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **GFL0053580** | GFL0082541 | GFL0078521 |
| Sample Date | | Client Info | | **29 Sep 2023** | 31 May 2023 | 04 Apr 2023 |
| Machine Age | kms | Client Info | | **0** | 0 | 19837 |
| Oil Age | kms | Client Info | | **0** | 544833 | 0 |
| Oil Changed | | Client Info | | **N/A** | N/A | Changed |
| Sample Status | | | | **ABNORMAL** | ABNORMAL | NORMAL |

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

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185(m) | >120 | **22** | 11 | 23 |
| Chromium | ppm | ASTM D5185(m) | >20 | **2** | <1 | 1 |
| Nickel | ppm | ASTM D5185(m) | >5 | **<1** | <1 | <1 |
| Titanium | ppm | ASTM D5185(m) | >2 | **0** | <1 | <1 |
| Silver | ppm | ASTM D5185(m) | >2 | **<1** | 0 | 0 |
| Aluminum | ppm | ASTM D5185(m) | >20 | **13** | 3 | 8 |
| Lead | ppm | ASTM D5185(m) | >40 | **1** | 0 | <1 |
| Copper | ppm | ASTM D5185(m) | >330 | **3** | <1 | 2 |
| Tin | ppm | ASTM D5185(m) | >15 | **<1** | <1 | <1 |
| Antimony | ppm | ASTM D5185(m) | | **0** | <1 | 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 | **22** | 29 | 2 |
| Barium | ppm | ASTM D5185(m) | 0 | **<1** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185(m) | 60 | **39** | 41 | 60 |
| Manganese | ppm | ASTM D5185(m) | 0 | **0** | <1 | <1 |
| Magnesium | ppm | ASTM D5185(m) | 1010 | **470** | 515 | 947 |
| Calcium | ppm | ASTM D5185(m) | 1070 | **1769** | 1664 | 1132 |
| Phosphorus | ppm | ASTM D5185(m) | 1150 | **722** | 798 | 1027 |
| Zinc | ppm | ASTM D5185(m) | 1270 | **899** | 870 | 1169 |
| Sulfur | ppm | ASTM D5185(m) | 2060 | **1968** | 2034 | 2266 |
| Lithium | ppm | ASTM D5185(m) | | **<1** | <1 | <1 |

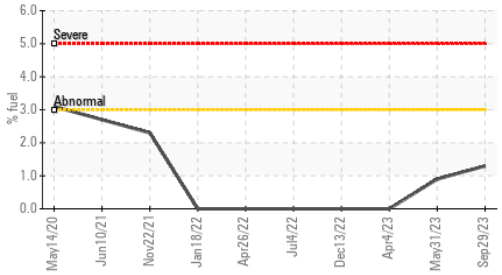
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >25 | **7** | 5 | 4 |
| Sodium | ppm | ASTM D5185(m) | | **4** | 3 | 6 |
| Potassium | ppm | ASTM D5185(m) | >20 | **<1** | <1 | 0 |
| Fuel | % | ASTM D7593* | >3.0 | **1.3** | 0.9 | <1.0 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | ASTM D7844* | >4 | **1.7** | 1.1 | 0.6 |
| Nitration | Abs/cm | ASTM D7624* | >20 | **11.3** | 9.0 | 5.6 |
| Sulfation | Abs/.1mm | ASTM D7415* | >30 | **25.4** | 24.2 | 18.8 |

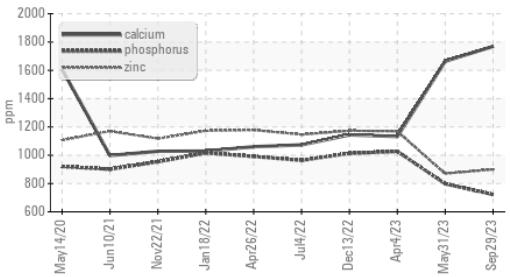
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | ASTM D7414* | >25 | **21.8** | 20.4 | 8.1 |

# OIL ANALYSIS REPORT

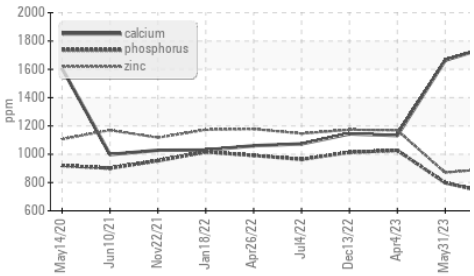
Fuel Dilution




Additives




Additives

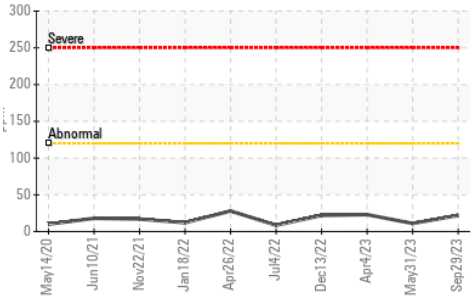



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Emulsified Water | scalar | Visual* | >0.2 | **NEG** | NEG | NEG |
| Free Water | scalar | Visual* | | **NEG** | NEG | NEG |

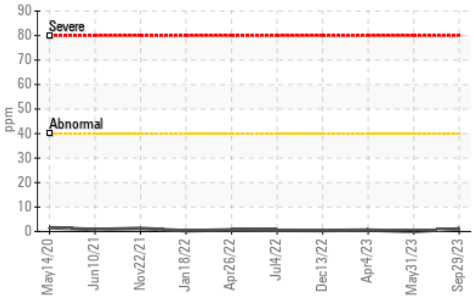
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D7279(m) | 15.4 | ▲ **12.1** | ▲ 12.0 | 14.3 |

## GRAPHS

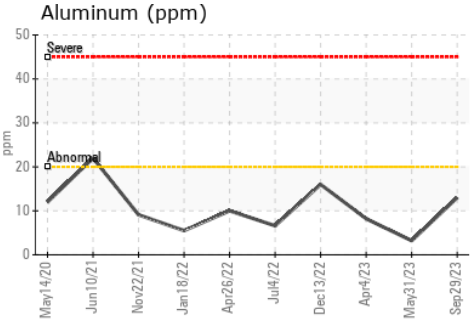
Iron (ppm)



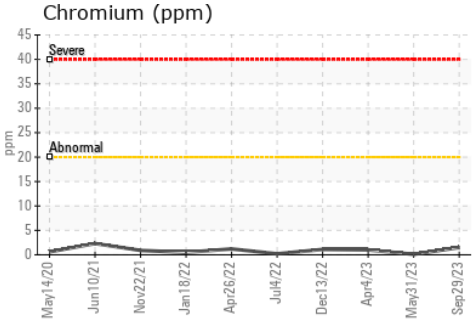

Lead (ppm)



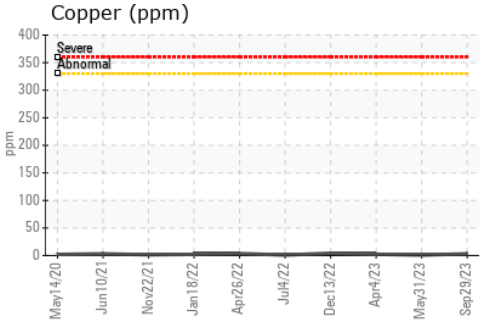

Aluminum (ppm)



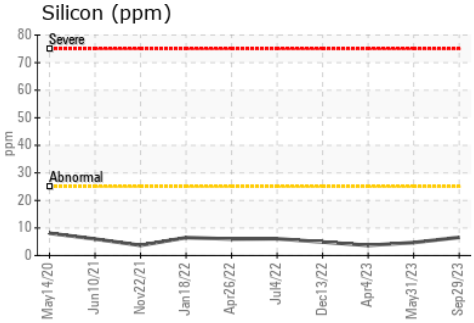

Chromium (ppm)



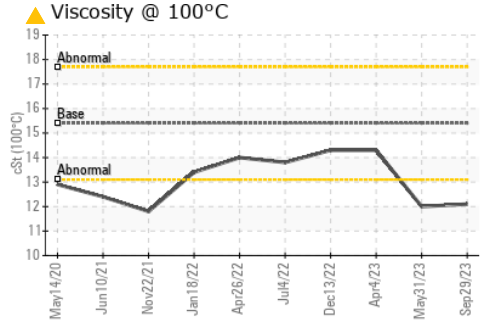

Copper (ppm)



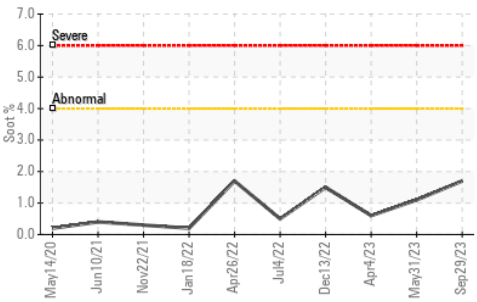

Silicon (ppm)




▲ Viscosity @ 100°C




Soot %




CALA Testing Accreditation No. 1005078
ISO 17025:2017 Accredited Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
**Sample No.** : GFL0053580
**Lab Number** : 02586295
**Unique Number** : 5655361
**Test Package** : MOB 1 ( Additional Tests: FUELDILUTION, PercentFuel )

**Received** : 03 Oct 2023
**Diagnosed** : 05 Oct 2023
**Diagnostician** : 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.*


**GFL Environmental - 246 - Windsor**
2700 Deziel Dr
Windsor, ON
CA N8W 5H8
Contact: Dave Varga
dvarga@gflenv.com
T: (519)944-8009
F: