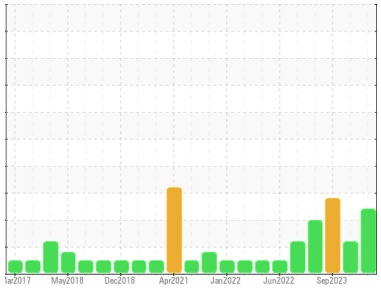
# OIL ANALYSIS REPORT

Sample Rating Trend




**FUEL**

Machine Id
**9973**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 10W30 (--- GAL)**

## 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**
All component wear rates are normal.

**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 | | **GFL0093890** | GFL0093902 | GFL0090589 |
| Sample Date | | Client Info | | **04 Oct 2023** | 19 Sep 2023 | 08 Sep 2023 |
| Machine Age | hrs | Client Info | | **28141** | 28029 | 27944 |
| Oil Age | hrs | Client Info | | **0** | 429 | 342 |
| Oil Changed | | Client Info | | **Changed** | Not Changd | N/A |
| Sample Status | | | | **SEVERE** | ABNORMAL | SEVERE |

| CONTAMINATION | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Glycol | WC Method | | **NEG** | NEG | 0.0 |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185(m) | >110 | **6** | 4 | 13 |
| Chromium | ppm | ASTM D5185(m) | >4 | **<1** | <1 | <1 |
| Nickel | ppm | ASTM D5185(m) | >2 | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185(m) | >2 | **<1** | <1 | 0 |
| Aluminum | ppm | ASTM D5185(m) | >25 | **2** | 1 | 4 |
| Lead | ppm | ASTM D5185(m) | >45 | **<1** | <1 | 1 |
| Copper | ppm | ASTM D5185(m) | >85 | **<1** | <1 | 3 |
| Tin | ppm | ASTM D5185(m) | >4 | **0** | 0 | <1 |
| 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) | 2 | **2** | 3 | 7 |
| Barium | ppm | ASTM D5185(m) | 0 | **<1** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185(m) | 50 | **52** | 53 | 49 |
| Manganese | ppm | ASTM D5185(m) | 0 | **0** | 0 | <1 |
| Magnesium | ppm | ASTM D5185(m) | 950 | **821** | 863 | 745 |
| Calcium | ppm | ASTM D5185(m) | 1050 | **897** | 940 | 843 |
| Phosphorus | ppm | ASTM D5185(m) | 995 | **883** | 903 | 852 |
| Zinc | ppm | ASTM D5185(m) | 1180 | **1020** | 1055 | 932 |
| Sulfur | ppm | ASTM D5185(m) | 2600 | **2229** | 2343 | 2082 |
| Lithium | ppm | ASTM D5185(m) | | **<1** | <1 | <1 |

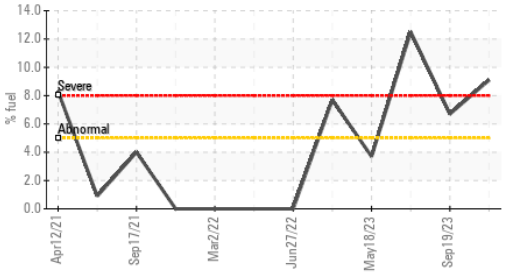
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >30 | **4** | 3 | 7 |
| Sodium | ppm | ASTM D5185(m) | | **11** | 6 | 28 |
| Potassium | ppm | ASTM D5185(m) | >20 | **<1** | 2 | 8 |
| Fuel | % | ASTM D7593* | >5 | **9.1** | 6.7 | 12.5 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | ASTM D7844* | >3 | **0.2** | 0.1 | 0.4 |
| Nitration | Abs/cm | ASTM D7624* | >20 | **7.5** | 6.0 | 8.6 |
| Sulfation | Abs/.1mm | ASTM D7415* | >30 | **21.6** | 19.8 | 22.9 |

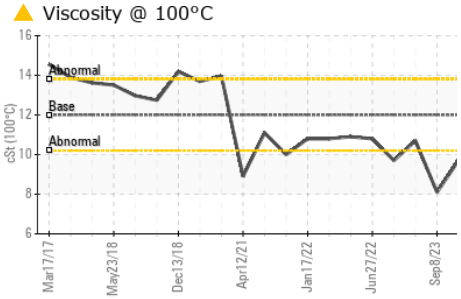
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | ASTM D7414* | >25 | **20.3** | 17.1 | 24.0 |

# OIL ANALYSIS REPORT

Fuel Dilution




Viscosity @ 100°C

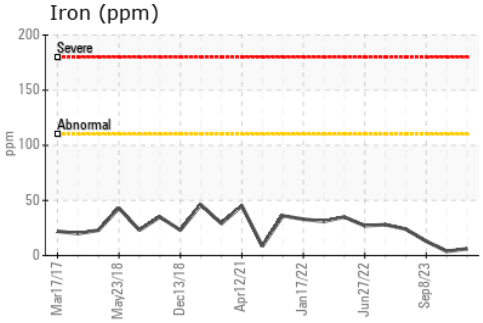



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Emulsified Water | scalar | Visual* | >0.2 | **NEG** | NEG | NEG |
| Free Water | scalar | Visual* | | **NEG** | NEG | NEG |

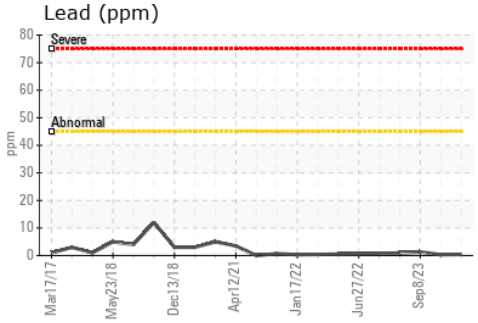
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D7279(m) | 12.00 | ▲ **9.1** | ▲ 9.7 | ⬢ 8.1 |

## GRAPHS

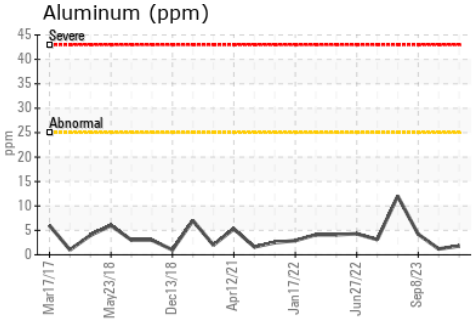
Iron (ppm)



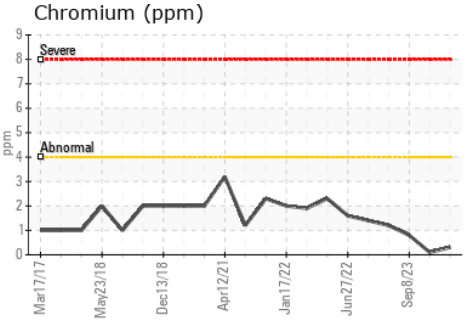

Lead (ppm)



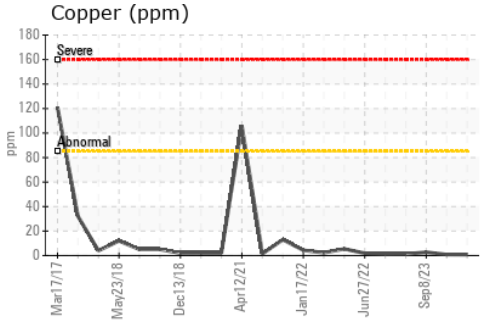

Aluminum (ppm)



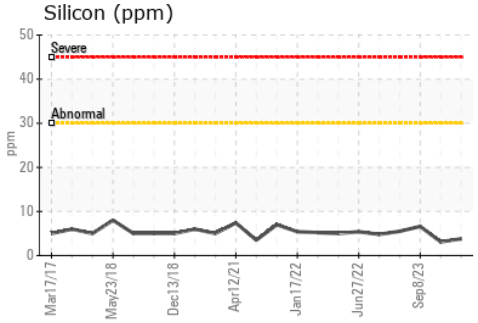

Chromium (ppm)



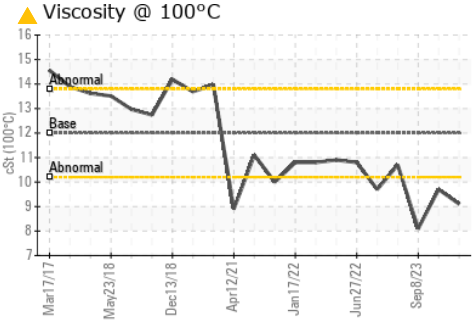

Copper (ppm)



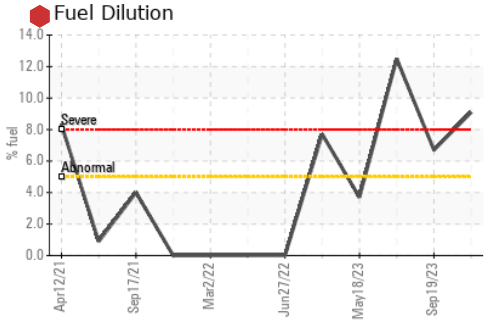

Silicon (ppm)




Viscosity @ 100°C




Fuel Dilution




ISO 17025:2017 Accredited Laboratory

| | | | |
|---|---|---|---|
| **Laboratory** | : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 **GFL Environmental - 554 - Edmonton SW** | | |
| **Sample No.** | : GFL0093890 | **Received** | : 16 Oct 2023 |
| **Lab Number** | : 02589207 | **Diagnosed** | : 17 Oct 2023 |
| **Unique Number** | : 5658273 | **Diagnostician** | : Wes Davis |
| **Test Package** | : MOB 1 ( Additional Tests: PercentFuel ) | | |

*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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