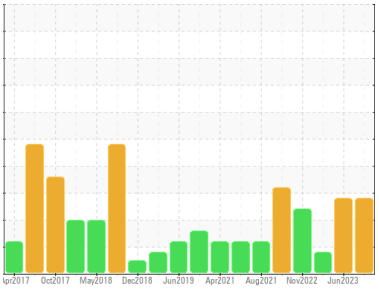
# OIL ANALYSIS REPORT

Sample Rating Trend




**FUEL**

Machine Id
**7822**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 10W30 (--- LTR)**

## DIAGNOSIS

**Recommendation**
We advise that you check the fuel injection system. We recommend that you drain the oil from the component if this has not already been done. 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 | | **GFL0090597** | GFL0085911 | GFL0085926 |
| Sample Date | | Client Info | | **06 Sep 2023** | 22 Jun 2023 | 04 May 2023 |
| Machine Age | hrs | Client Info | | **17951** | 17795 | 0 |
| Oil Age | hrs | Client Info | | **0** | 600 | 0 |
| Oil Changed | | Client Info | | **N/A** | N/A | N/A |
| Sample Status | | | | **SEVERE** | SEVERE | MARGINAL |

| 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) | >110 | **17** | 30 | 8 |
| Chromium | ppm | ASTM D5185(m) | >4 | **1** | 2 | <1 |
| Nickel | ppm | ASTM D5185(m) | >2 | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185(m) | >2 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185(m) | >25 | **2** | 3 | 2 |
| Lead | ppm | ASTM D5185(m) | >45 | **<1** | <1 | <1 |
| Copper | ppm | ASTM D5185(m) | >85 | **3** | 6 | 2 |
| Tin | ppm | ASTM D5185(m) | >4 | **<1** | <1 | 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) | 2 | **1** | 1 | 2 |
| Barium | ppm | ASTM D5185(m) | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185(m) | 50 | **43** | 44 | 55 |
| Manganese | ppm | ASTM D5185(m) | 0 | **<1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185(m) | 950 | **699** | 727 | 925 |
| Calcium | ppm | ASTM D5185(m) | 1050 | **755** | 774 | 969 |
| Phosphorus | ppm | ASTM D5185(m) | 995 | **801** | 796 | 1018 |
| Zinc | ppm | ASTM D5185(m) | 1180 | **868** | 873 | 1130 |
| Sulfur | ppm | ASTM D5185(m) | 2600 | **1908** | 1847 | 2503 |
| Lithium | ppm | ASTM D5185(m) | | **<1** | <1 | <1 |

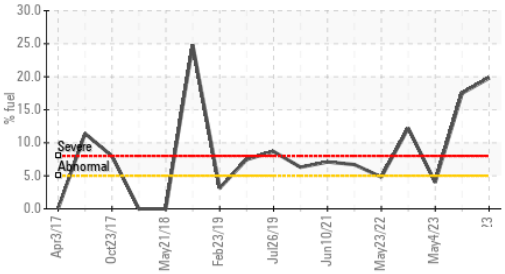
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >30 | **4** | 5 | 4 |
| Sodium | ppm | ASTM D5185(m) | | **5** | 5 | 3 |
| Potassium | ppm | ASTM D5185(m) | >20 | **2** | 2 | <1 |
| Fuel | % | ASTM D7593* | >5 | **19.8** | 17.5 | 4 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | ASTM D7844* | >3 | **0.6** | 1 | 0.2 |
| Nitration | Abs/cm | ASTM D7624* | >20 | **8.7** | 10.2 | 5.8 |
| Sulfation | Abs/.1mm | ASTM D7415* | >30 | **23.3** | 25.3 | 19.2 |

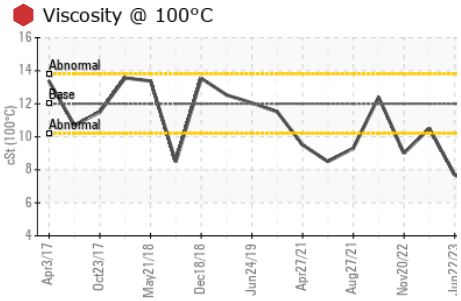
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | ASTM D7414* | >25 | **24.6** | 26.8 | 15.5 |

# OIL ANALYSIS REPORT

Fuel Dilution




Viscosity @ 100°C

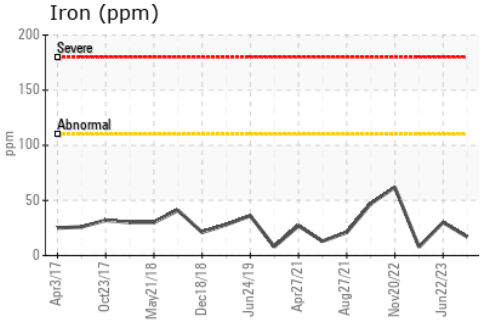



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Emulsified Water | scalar | Visual* | >0.2 | **NEG** | NEG | NEG |
| Free Water | scalar | Visual* | | **NEG** | NEG | NEG |

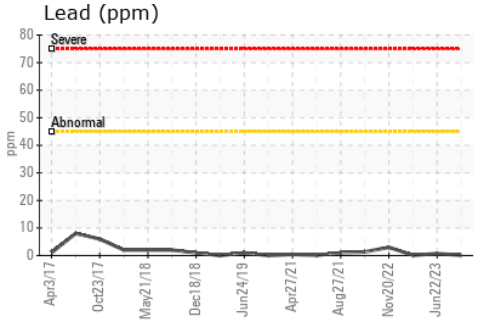
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D7279(m) | 12.00 | **6.9** | 7.7 | 10.5 |

## GRAPHS

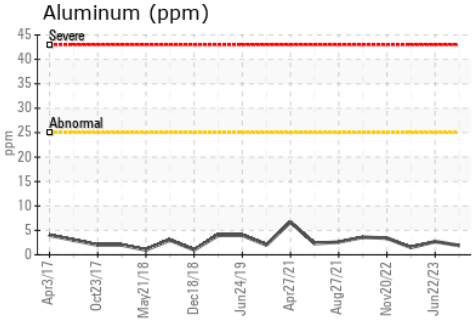
Iron (ppm)



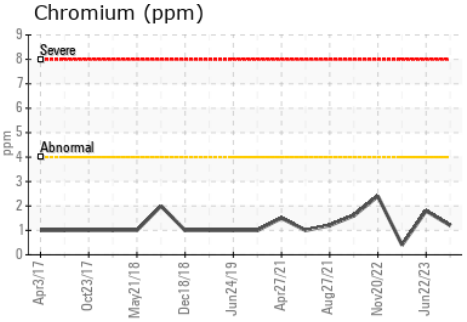

Lead (ppm)



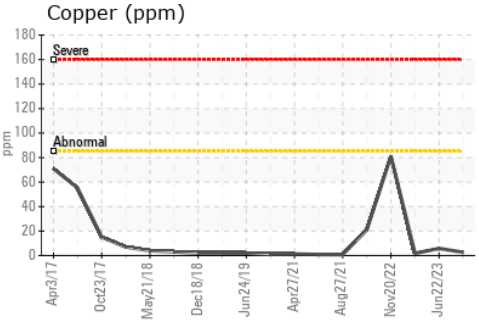

Aluminum (ppm)



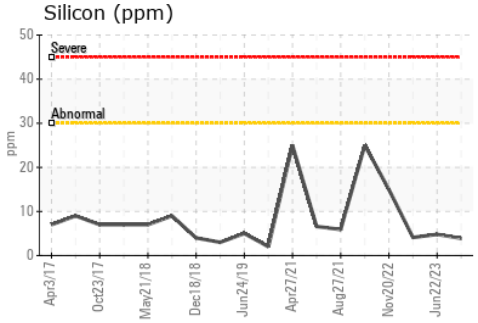

Chromium (ppm)



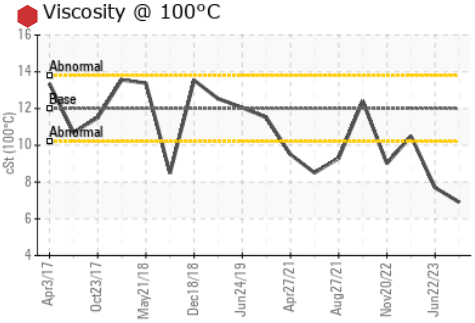

Copper (ppm)



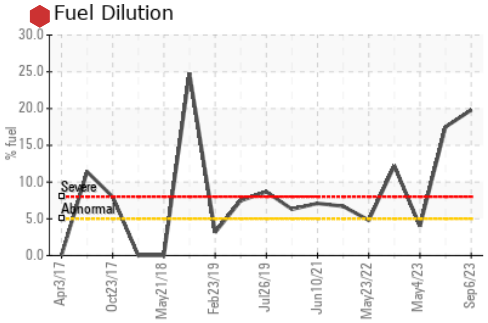

Silicon (ppm)




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.** : GFL0090597 **Received** : 18 Sep 2023
**Lab Number** : 02583120 **Diagnosed** : 19 Sep 2023
**Unique Number** : 5644185 **Diagnostician** : Wes Davis
**Test Package** : MOB 1 ( Additional Tests: PercentFuel )

8409 -15th Street NW
Edmonton, AB
CA T6P 0B8
Contact: Tim Greig
tgreig@gflenv.com
T:
F:

*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.*