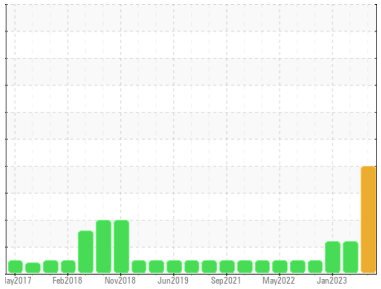
# OIL ANALYSIS REPORT

Machine Id
**8408**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON XL SYN BLEND 15W40 (--- GAL)**

Sample Rating Trend




**FUEL**

## DIAGNOSIS

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

**Wear**
Iron ppm levels are abnormal. Cylinder, crank, or cam shaft wear is indicated.

**Contamination**
There is a high amount of fuel present in the oil. Water treatment chemicals present, indicating slow coolant leak. Test for glycol is negative. Tests confirm the presence of fuel in the oil.

**Fluid Condition**
The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **GFL0099586** | GFL0070747 | GFL0063788 |
| Sample Date | | Client Info | | **11 Dec 2023** | 08 Mar 2023 | 02 Jan 2023 |
| Machine Age | hrs | Client Info | | **16561** | 15099 | 14653 |
| Oil Age | hrs | Client Info | | **0** | 450 | 721 |
| Oil Changed | | Client Info | | **Changed** | Changed | Changed |
| Sample Status | | | | **SEVERE** | ATTENTION | ATTENTION |

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

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| PQ | | ASTM D8184* | | **0** | --- | --- |
| Iron | ppm | ASTM D5185(m) | >75 | ▲ **101** | 41 | 64 |
| Chromium | ppm | ASTM D5185(m) | >5 | **3** | 1 | 3 |
| Nickel | ppm | ASTM D5185(m) | >4 | **<1** | <1 | <1 |
| Titanium | ppm | ASTM D5185(m) | >2 | **0** | <1 | <1 |
| Silver | ppm | ASTM D5185(m) | >2 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185(m) | >15 | **5** | 3 | 5 |
| Lead | ppm | ASTM D5185(m) | >25 | **0** | 0 | 0 |
| Copper | ppm | ASTM D5185(m) | >100 | **2** | 1 | 2 |
| Tin | ppm | ASTM D5185(m) | >4 | **<1** | 0 | <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) | 1 | **2** | 1 | 3 |
| Barium | ppm | ASTM D5185(m) | 1 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185(m) | 60 | **58** | 86 | 90 |
| Manganese | ppm | ASTM D5185(m) | 1 | **<1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185(m) | 1010 | **833** | 897 | 928 |
| Calcium | ppm | ASTM D5185(m) | 1070 | **931** | 1119 | 1096 |
| Phosphorus | ppm | ASTM D5185(m) | 1150 | **866** | 1030 | 952 |
| Zinc | ppm | ASTM D5185(m) | 1270 | **1035** | 1142 | 1137 |
| Sulfur | ppm | ASTM D5185(m) | 2060 | **2197** | 2500 | 2426 |
| Lithium | ppm | ASTM D5185(m) | | **<1** | <1 | <1 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >25 | **11** | 6 | 11 |
| Sodium | ppm | ASTM D5185(m) | | ▲ **179** | ▲ 732 | ▲ 838 |
| Potassium | ppm | ASTM D5185(m) | >20 | **2** | 2 | 3 |
| Fuel | % | ASTM D7593* | >3.0 | ● **7** | <1.0 | <1.0 |
| Glycol | % | ASTM D7922* | | **0.0** | 0.0 | 0.0 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | ASTM D7844* | >6 | **3.7** | 0.5 | 1.1 |
| Nitration | Abs/cm | ASTM D7624* | >20 | **15.2** | 10.8 | 11.5 |
| Sulfation | Abs/.1mm | ASTM D7415* | >30 | **30.9** | 23.8 | 22.5 |

# OIL ANALYSIS REPORT

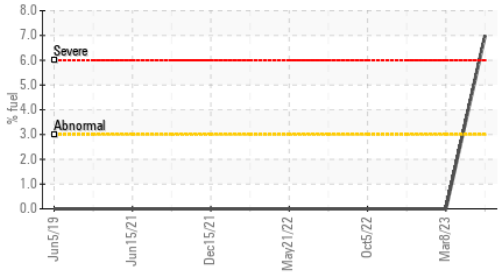
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | ASTM D7414* | >25 | **26.7** | 18.5 | 18.9 |
| Base Number (BN) | mg KOH/g | ASTM D2896* | 9.6 | **6.77** | 8.35 | 8.50 |

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

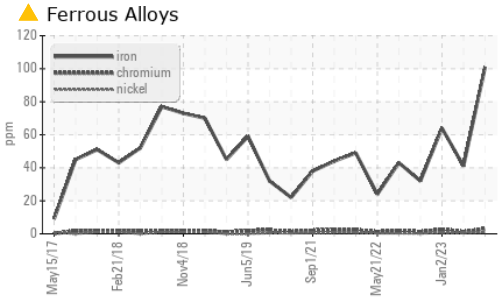
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D7279(m) | 15.5 | **13.8** | 14.1 | 14.1 |

## GRAPHS

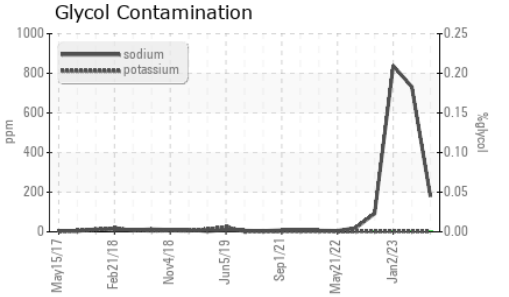
Fuel Dilution




Ferrous Alloys

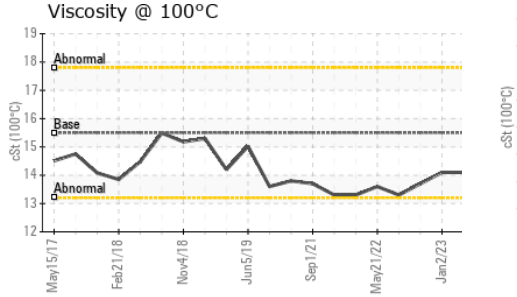



Glycol Contamination

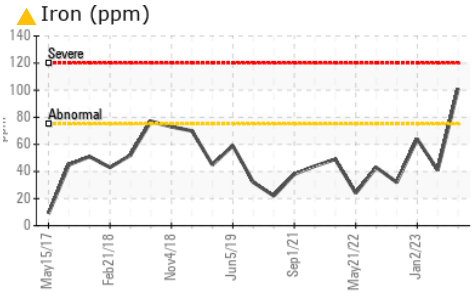



PQ

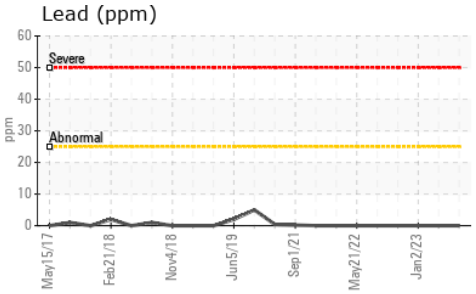

Viscosity @ 100°C



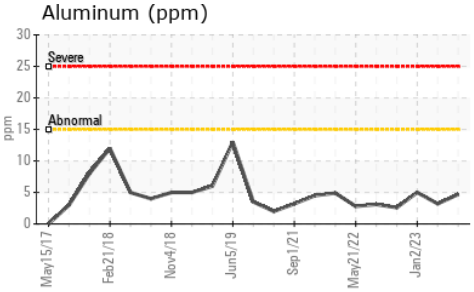

Iron (ppm)



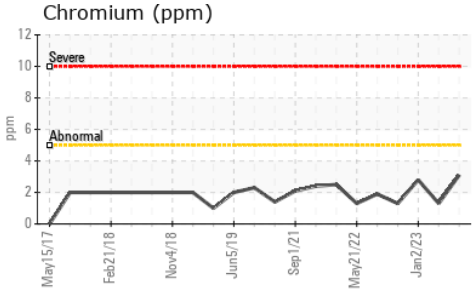

Lead (ppm)



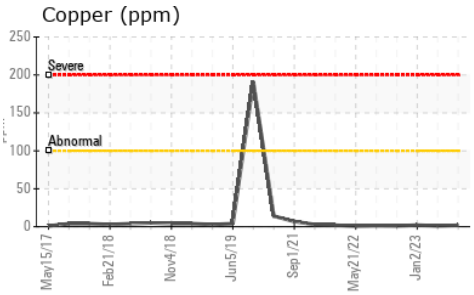

Aluminum (ppm)



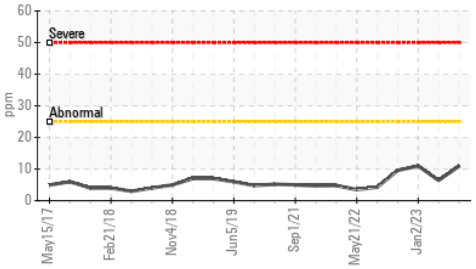

Chromium (ppm)



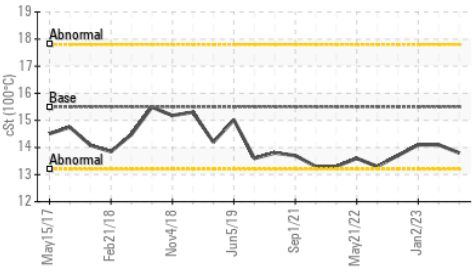

Copper (ppm)



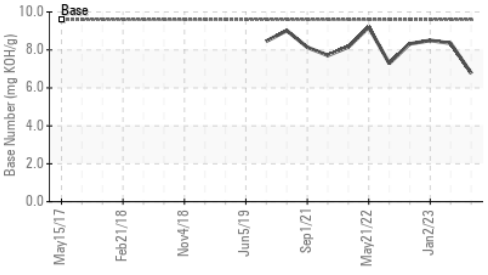

Silicon (ppm)




Viscosity @ 100°C




Base Number




ISO 17025:2017 Accredited Laboratory


**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 **GFL Environmental - 550 - Rocky View County**
**Sample No.** : GFL0099586 **Recieved** : 20 Dec 2023 220 Carmek Blvd
**Lab Number** : 02604319 **Diagnosed** : 27 Dec 2023 Rocky View County, AB
**Unique Number** : 5697404 **Diagnostician** : Kevin Marson CA T1X 1X1
**Test Package** : MOB 2 ( Additional Tests: FUELDILUTION, Glycol, PercentFuel, PQ ) Contact: GFL Calgary


*To discuss this sample report, contact Customer Service at 1-800-268-2131.* calgarymaintenance@gflenv.com
*Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.* T:
*Validity of results and interpretation are based on the sample and information as supplied.* F: (403)369-6163