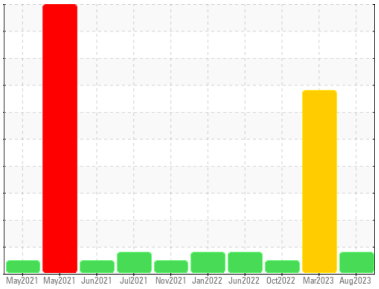
# OIL ANALYSIS REPORT

Sample Rating Trend




**WEAR**

Machine Id
**9132**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON HP 15W40 (--- GAL)**

## DIAGNOSIS

**Recommendation**
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**
The water content is negligible. There is no indication of any contamination 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 | | **GFL0084304** | GFL0070698 | GFL0060227 |
| Sample Date | | Client Info | | **02 Aug 2023** | 21 Mar 2023 | 04 Oct 2022 |
| Machine Age | hrs | Client Info | | **11129** | 20028 | 20028 |
| Oil Age | hrs | Client Info | | **500** | 600 | 204 |
| Oil Changed | | Client Info | | **Changed** | Changed | Changed |
| Sample Status | | | | **ABNORMAL** | SEVERE | NORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >3.0 | **<1.0** | <1.0 | <1.0 |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| PQ | | ASTM D8184* | | **0** | 0 | --- |
| Iron | ppm | ASTM D5185(m) | >75 | ▲ **76** | ▲ 87 | 22 |
| Chromium | ppm | ASTM D5185(m) | >5 | **4** | 4 | 1 |
| Nickel | ppm | ASTM D5185(m) | >4 | **1** | 2 | <1 |
| Titanium | ppm | ASTM D5185(m) | >2 | **<1** | <1 | <1 |
| Silver | ppm | ASTM D5185(m) | >2 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185(m) | >15 | **14** | ⬢ 26 | 6 |
| Lead | ppm | ASTM D5185(m) | >25 | **<1** | 1 | <1 |
| Copper | ppm | ASTM D5185(m) | >100 | **3** | 6 | <1 |
| 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 |

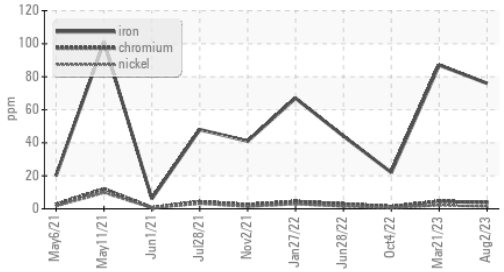
| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185(m) | 0 | **2** | 3 | 2 |
| Barium | ppm | ASTM D5185(m) | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185(m) | 60 | **58** | 62 | 56 |
| Manganese | ppm | ASTM D5185(m) | 0 | **<1** | 1 | <1 |
| Magnesium | ppm | ASTM D5185(m) | 1010 | **936** | 940 | 926 |
| Calcium | ppm | ASTM D5185(m) | 1070 | **1043** | 1145 | 1065 |
| Phosphorus | ppm | ASTM D5185(m) | 1150 | **995** | 1016 | 1053 |
| Zinc | ppm | ASTM D5185(m) | 1270 | **1161** | 1200 | 1171 |
| Sulfur | ppm | ASTM D5185(m) | 2060 | **2343** | 2471 | 2560 |
| Lithium | ppm | ASTM D5185(m) | | **<1** | <1 | <1 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >25 | **13** | 9 | 13 |
| Sodium | ppm | ASTM D5185(m) | | **9** | 11 | 5 |
| Potassium | ppm | ASTM D5185(m) | >20 | **8** | 20 | 5 |
| Glycol | % | ASTM D7922* | | **0.0** | 0.0 | NEG |

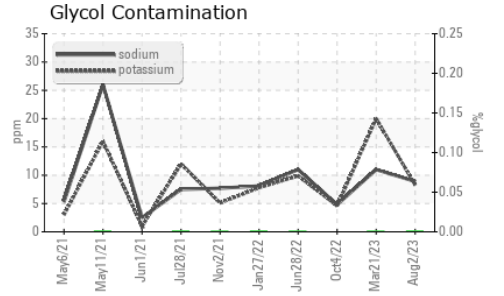
| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | ASTM D7844* | >6 | **3** | 1.4 | 0.3 |
| Nitration | Abs/cm | ASTM D7624* | >20 | **13.0** | 14.0 | 7.7 |
| Sulfation | Abs/.1mm | ASTM D7415* | >30 | **27.8** | 28.2 | 21.3 |

# OIL ANALYSIS REPORT

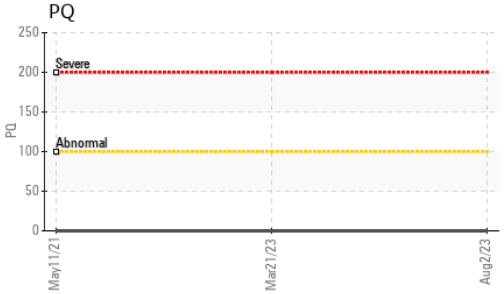
## Ferrous Alloys



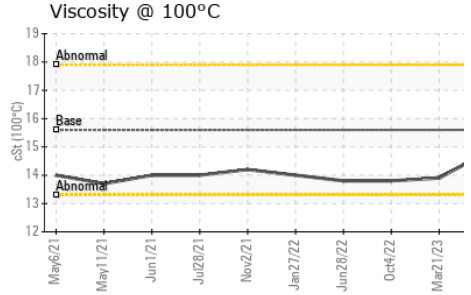

## Glycol Contamination



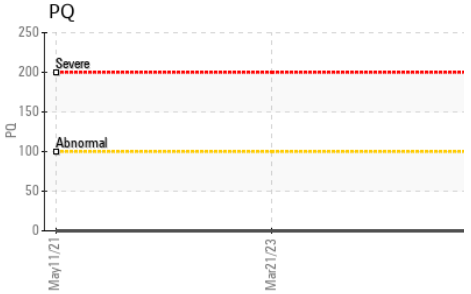

## PQ




## Viscosity @ 100°C




## PQ



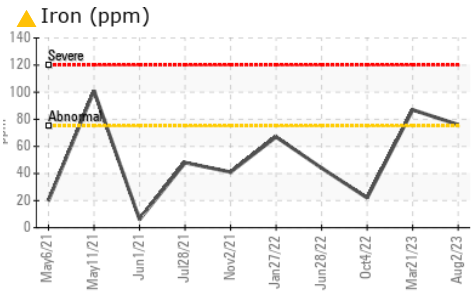

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | ASTM D7414* | >25 | **21.2** | 21.1 | 16.9 |
| Base Number (BN) | mg KOH/g | ASTM D2896* | 9.8 | **7.85** | 6.90 | 9.22 |

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

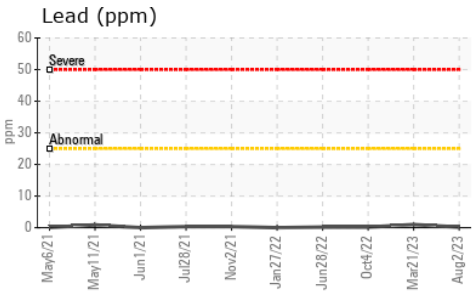
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D7279(m) | 15.6 | **14.8** | 13.9 | 13.8 |

## GRAPHS

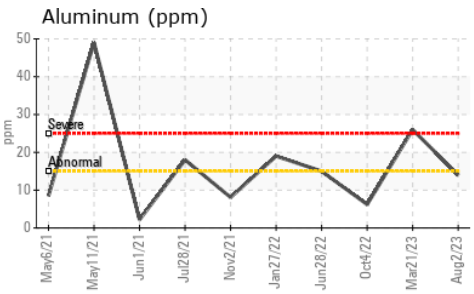
### Iron (ppm)



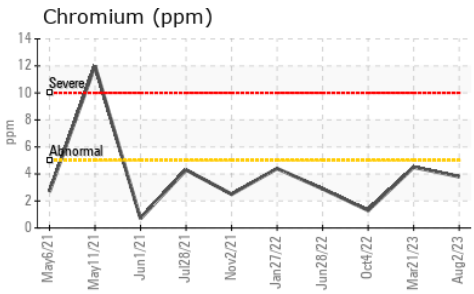

### Lead (ppm)



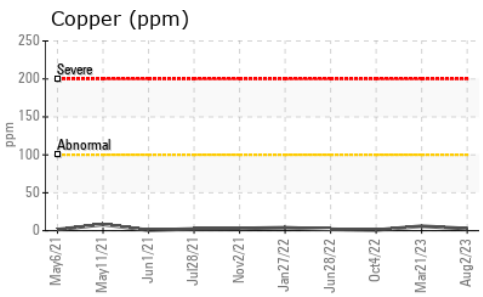

### Aluminum (ppm)



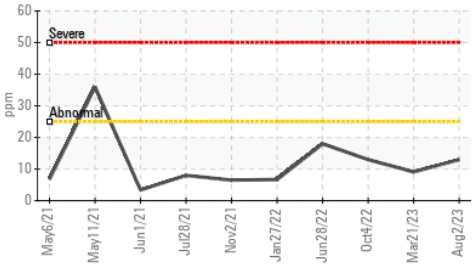

### Chromium (ppm)



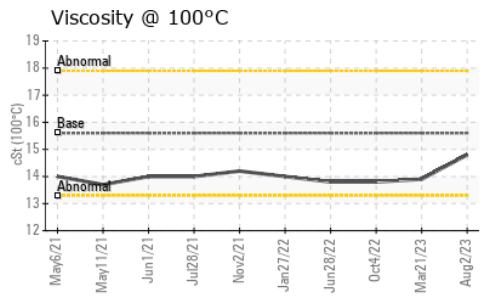

### Copper (ppm)



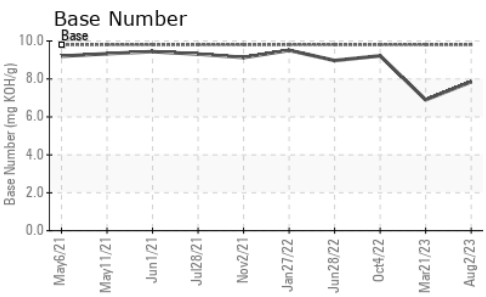

### Silicon (ppm)




### 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.** : GFL0084304 **Received** : 08 Aug 2023 220 Carmek Blvd
**Lab Number** : 02574451 **Diagnosed** : 09 Aug 2023 Rocky View County, AB
**Unique Number** : 5619502 **Diagnostician** : Kevin Marson CA T1X 1X1
**Test Package** : MOB 2 ( Additional Tests: Glycol, 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