# OIL ANALYSIS REPORT

Area
**{UNASSIGNED}**
Machine Id
**914035**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON HP 15W40 (--- GAL)**

Sample Rating Trend


**DIRT**

## DIAGNOSIS

**Recommendation**
Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.

**Wear**
All component wear rates are normal.

**Contamination**
Fuel content negligible. Elemental level of silicon (Si) above normal indicating ingress of dirt/seal material.

**Fluid Condition**
The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **GFL0097801** | --- | --- |
| Sample Date | | Client Info | | **12 Feb 2024** | --- | --- |
| Machine Age | hrs | Client Info | | **0** | --- | --- |
| Oil Age | hrs | Client Info | | **583** | --- | --- |
| Oil Changed | | Client Info | | **Changed** | --- | --- |
| Sample Status | | | | **ABNORMAL** | --- | --- |

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

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >120 | **44** | --- | --- |
| Chromium | ppm | ASTM D5185m | >20 | **2** | --- | --- |
| Nickel | ppm | ASTM D5185m | >5 | **6** | --- | --- |
| Titanium | ppm | ASTM D5185m | >2 | **<1** | --- | --- |
| Silver | ppm | ASTM D5185m | >2 | **2** | --- | --- |
| Aluminum | ppm | ASTM D5185m | >20 | **4** | --- | --- |
| Lead | ppm | ASTM D5185m | >40 | **<1** | --- | --- |
| Copper | ppm | ASTM D5185m | >330 | **224** | --- | --- |
| Tin | ppm | ASTM D5185m | >15 | **3** | --- | --- |
| Vanadium | ppm | ASTM D5185m | | **<1** | --- | --- |
| Cadmium | ppm | ASTM D5185m | | **<1** | --- | --- |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **223** | --- | --- |
| Barium | ppm | ASTM D5185m | | **0** | --- | --- |
| Molybdenum | ppm | ASTM D5185m | | **112** | --- | --- |
| Manganese | ppm | ASTM D5185m | | **4** | --- | --- |
| Magnesium | ppm | ASTM D5185m | | **727** | --- | --- |
| Calcium | ppm | ASTM D5185m | | **1338** | --- | --- |
| Phosphorus | ppm | ASTM D5185m | | **784** | --- | --- |
| Zinc | ppm | ASTM D5185m | | **850** | --- | --- |
| Sulfur | ppm | ASTM D5185m | | **2816** | --- | --- |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **83** | --- | --- |
| Sodium | ppm | ASTM D5185m | | **0** | --- | --- |
| Potassium | ppm | ASTM D5185m | >20 | **8** | --- | --- |
| Fuel | % | ASTM D3524 | >3.0 | **0.4** | --- | --- |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >4 | **0.4** | --- | --- |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **9.3** | --- | --- |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **24.2** | --- | --- |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **21.8** | --- | --- |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **7.7** | --- | --- |

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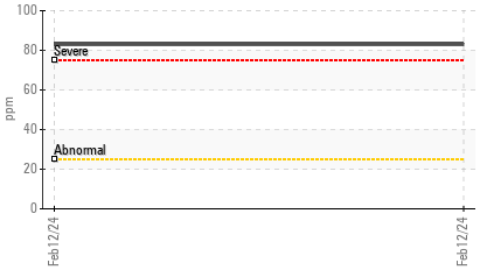
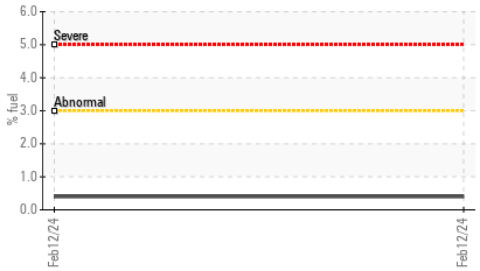
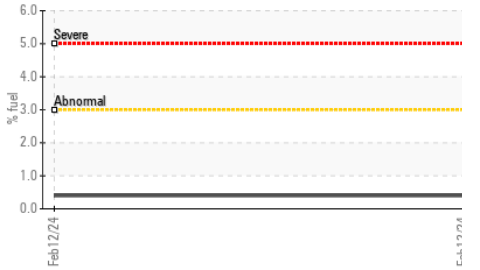
Silicon (ppm)



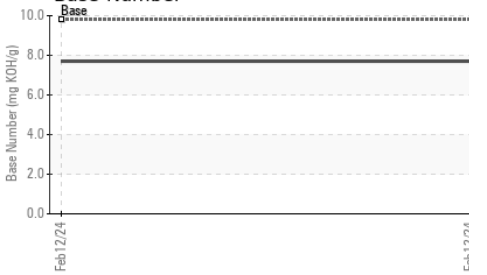

Fuel Dilution




Fuel Dilution




Base Number

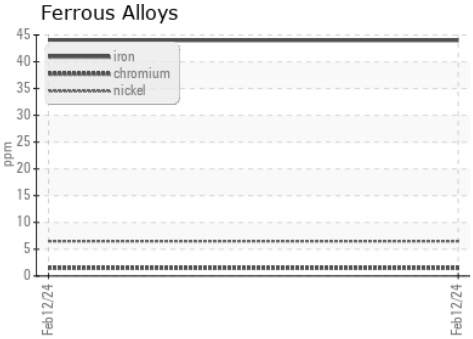



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | --- | --- |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | --- | --- |
| Precipitate | scalar | *Visual | NONE | **NONE** | --- | --- |
| Silt | scalar | *Visual | NONE | **NONE** | --- | --- |
| Debris | scalar | *Visual | NONE | **NONE** | --- | --- |
| Sand/Dirt | scalar | *Visual | NONE | **NONE** | --- | --- |
| Appearance | scalar | *Visual | NORML | **NORML** | --- | --- |
| Odor | scalar | *Visual | NORML | **NORML** | --- | --- |
| Emulsified Water | scalar | *Visual | >0.2 | **NEG** | --- | --- |
| Free Water | scalar | *Visual | | **NEG** | --- | --- |

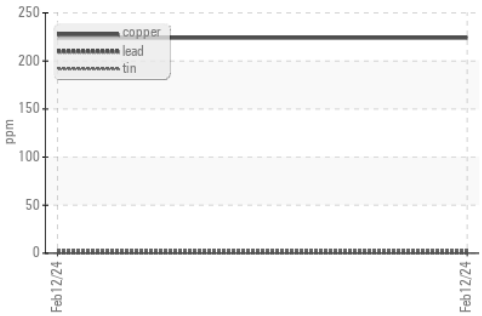
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.6 | ▲ **10.5** | --- | --- |

## GRAPHS

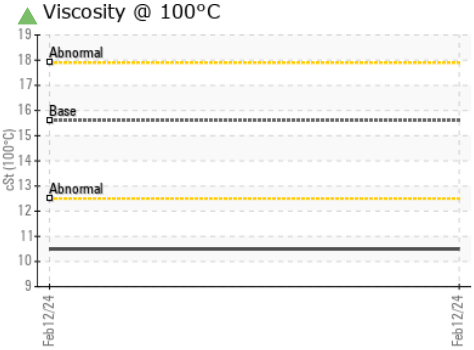
Ferrous Alloys



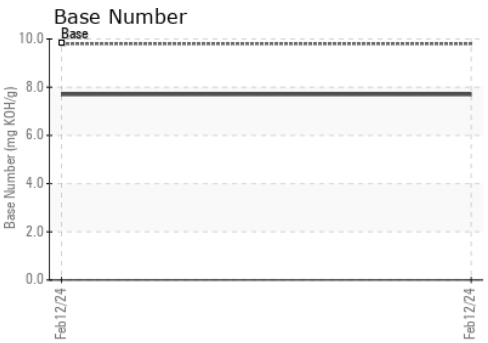

Non-ferrous Metals




▲ Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0097801
**Lab Number** : 06090736
**Unique Number** : 10883589
**Test Package** : FLEET ( Additional Tests: FuelDilution, PercentFuel )

**Received** : 15 Feb 2024
**Tested** : 19 Feb 2024
**Diagnosed** : 19 Feb 2024 - Don Baldridge

**GFL Environmental - 958 - Tri County HC Morton**
1090 W. Jefferson St.
Morton, IL
US 61550
Contact: Bryan Link
blink@gflenv.com
T:
F:

*To discuss this sample report, contact Customer Service at 1-800-237-1369.*
** - Denotes test methods that are outside of the ISO 17025 scope of accreditation.*
*Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)*