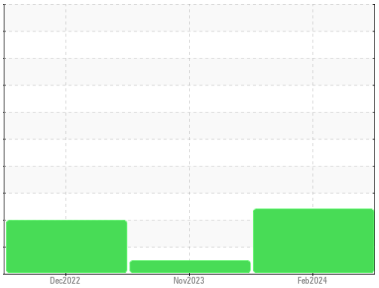
# PROBLEM SUMMARY

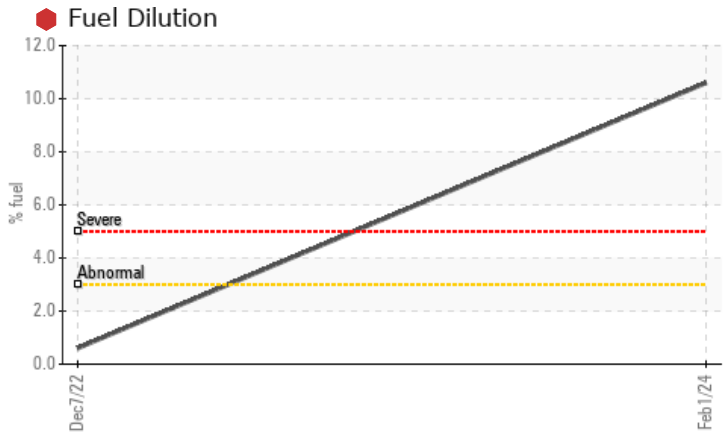
Machine Id
**913082**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (--- GAL)**

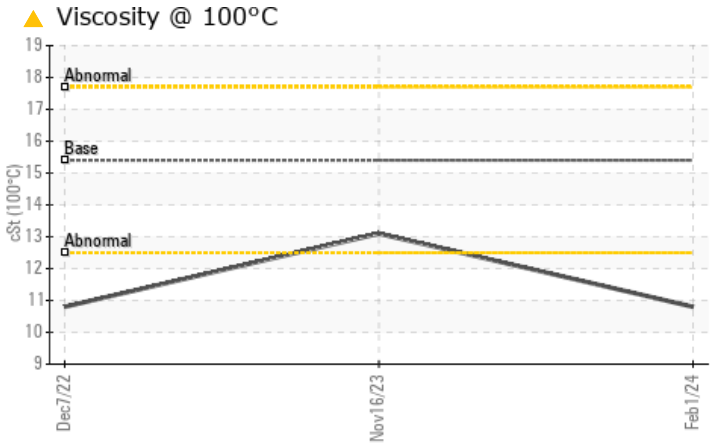
**Sample Rating Trend**




**FUEL**

## COMPONENT CONDITION SUMMARY




## 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.

## PROBLEMATIC TEST RESULTS

| Sample Status | | | | SEVERE | NORMAL | ABNORMAL |
|---|---|---|---|---|---|---|
| Fuel | % | ASTM D3524 | >3.0 | **10.6** | <1.0 | 0.6 |
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | **10.8** | 13.1 | 10.8 |

**Customer Id:** GFL415
**Sample No.:** GFL0108789
**Lab Number:** 06079482
**Test Package:** FLEET

*To manage this report scan the QR code*

*To discuss the diagnosis or test data:*
Wes Davis +1 905-569-8600 x223
wesd@wearcheck.ca

*To change component or sample information:*
Customer Service +1 1-800-237-1369
customerservice@wearcheck.com

## RECOMMENDED ACTIONS

| Action | Status | Date | Done By | Description |
|---|---|---|---|---|
| Resample | --- | --- | ? | We recommend an early resample to monitor this condition. |
| Check Fuel/injector System | --- | --- | ? | We advise that you check the fuel injection system. |

## HISTORICAL DIAGNOSIS

**16 Nov 2023 Diag: Wes Davis**

NORMAL

Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

view report

**07 Dec 2022 Diag: Don Baldridge**

DIRT

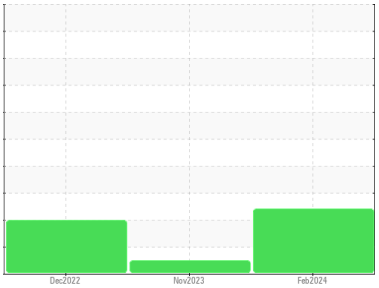
Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.Metal levels are typical for a new component breaking in. Fuel content negligible. Elemental level of silicon (Si) above normal indicating ingress of seal material. The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

view report

# OIL ANALYSIS REPORT

Machine Id
**913082**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (--- GAL)**

Sample Rating Trend




**FUEL**

## 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**
The BN result indicates that there is suitable alkalinity remaining in the oil. 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 | | **GFL0108789** | GFL0101528 | GFL0064041 |
| Sample Date | | Client Info | | **01 Feb 2024** | 16 Nov 2023 | 07 Dec 2022 |
| Machine Age | hrs | Client Info | | **35345** | 35345 | 1175 |
| Oil Age | hrs | Client Info | | **35345** | 1175 | 0 |
| Oil Changed | | Client Info | | **Changed** | Changed | Changed |
| Sample Status | | | | **SEVERE** | NORMAL | ABNORMAL |

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

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >120 | **10** | 7 | 79 |
| Chromium | ppm | ASTM D5185m | >20 | **<1** | <1 | 2 |
| Nickel | ppm | ASTM D5185m | >5 | **2** | 1 | 9 |
| Titanium | ppm | ASTM D5185m | >2 | **0** | <1 | <1 |
| Silver | ppm | ASTM D5185m | >2 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | **1** | 1 | 7 |
| Lead | ppm | ASTM D5185m | >40 | **1** | 0 | <1 |
| Copper | ppm | ASTM D5185m | >330 | **3** | 2 | 236 |
| Tin | ppm | ASTM D5185m | >15 | **<1** | <1 | 6 |
| Vanadium | ppm | ASTM D5185m | | **<1** | <1 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 0 | **0** | <1 | 61 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 60 | **46** | 53 | 115 |
| Manganese | ppm | ASTM D5185m | 0 | **<1** | <1 | 6 |
| Magnesium | ppm | ASTM D5185m | 1010 | **826** | 861 | 711 |
| Calcium | ppm | ASTM D5185m | 1070 | **892** | 975 | 1482 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **905** | 909 | 710 |
| Zinc | ppm | ASTM D5185m | 1270 | **1044** | 1173 | 911 |
| Sulfur | ppm | ASTM D5185m | 2060 | **2238** | 2566 | 2379 |

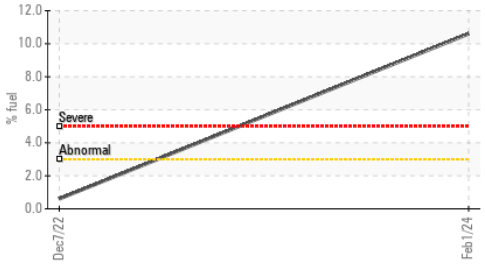
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **4** | 4 | ▲ 68 |
| Sodium | ppm | ASTM D5185m | | **2** | 3 | 4 |
| Potassium | ppm | ASTM D5185m | >20 | **3** | 2 | 13 |
| Fuel | % | ASTM D3524 | >3.0 | ● **10.6** | <1.0 | 0.6 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >4 | **0.6** | 0.4 | 1.1 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **9.0** | 6.0 | 13.1 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **18.9** | 18.2 | 27.3 |

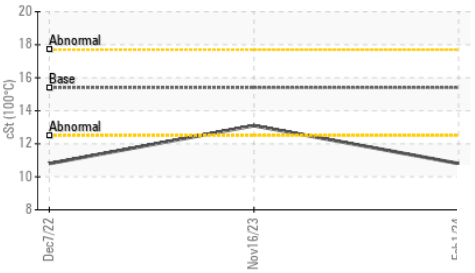
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **14.6** | 13.3 | 27.3 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **6.1** | 8.1 | 6.5 |

# OIL ANALYSIS REPORT

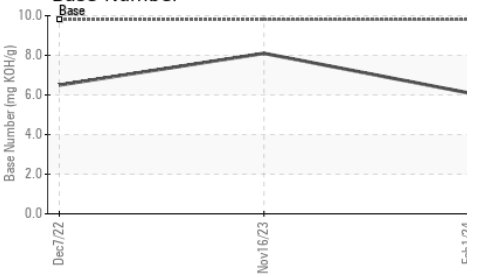
Fuel Dilution




Viscosity @ 100°C




Base Number

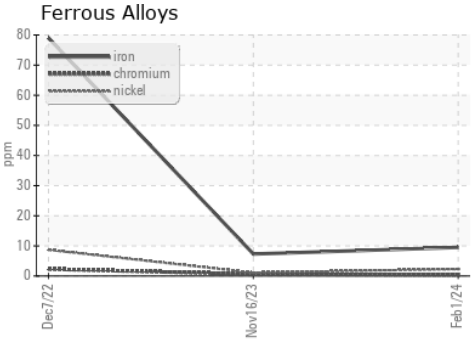



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

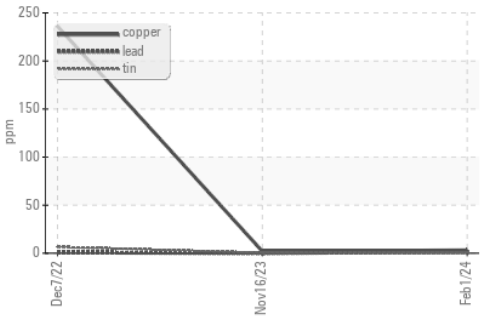
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | ▲ **10.8** | 13.1 | ▲ 10.8 |

## GRAPHS

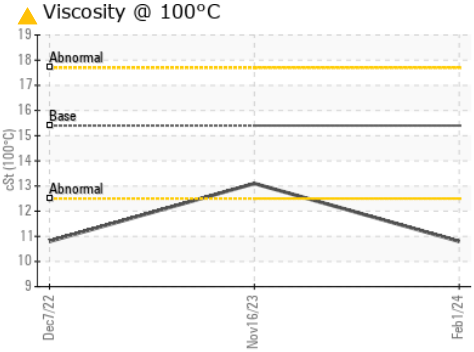
Ferrous Alloys



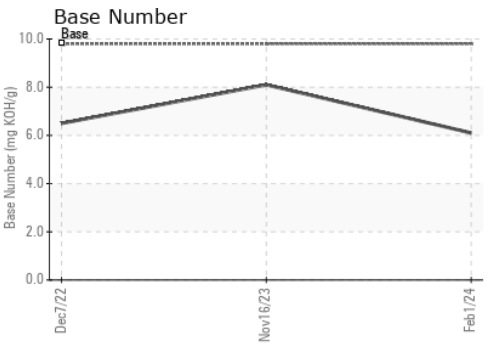

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0108789 **Recieved** : 05 Feb 2024
**Lab Number** : 06079482 **Diagnosed** : 07 Feb 2024
**Unique Number** : 10861573 **Diagnostician** : Wes Davis
**Test Package** : FLEET ( Additional Tests: FuelDilution, PercentFuel )

*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)*

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