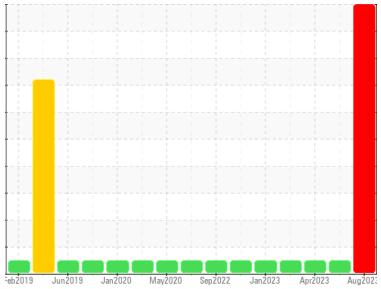
# PROBLEM SUMMARY

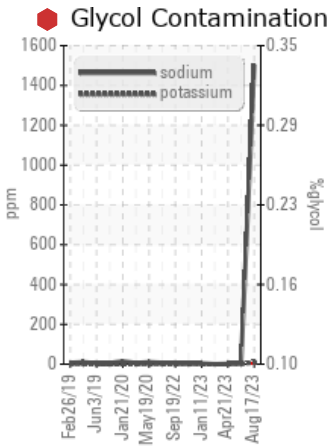
Machine Id
**929087-260320**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (--- GAL)**

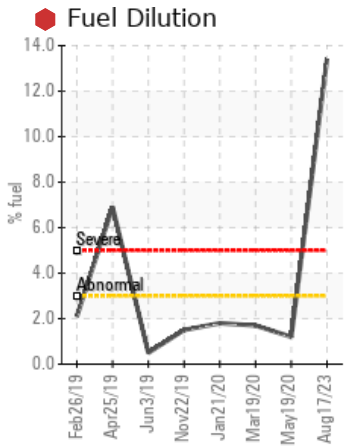
**Sample Rating Trend**

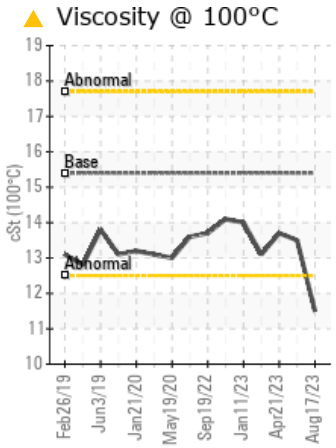


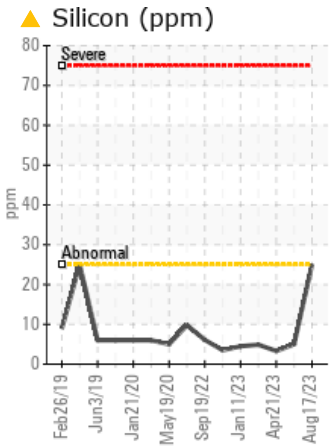
**GLYCOL**

## COMPONENT CONDITION SUMMARY




## RECOMMENDATION

We advise that you check the fuel injection system. We advise that you check for the source of the coolant leak. We recommend that you drain the oil and perform a filter service on this component if not already done. We recommend an early resample to monitor this condition.

## PROBLEMATIC TEST RESULTS

| Sample Status | | | | **SEVERE** | NORMAL | NORMAL |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | ▲ **25** | 5 | 3 |
| Sodium | ppm | ASTM D5185m | | ▲ **1503** | 4 | 2 |
| Fuel | % | ASTM D3524 | >3.0 | ⬢ **13.4** | <1.0 | <1.0 |
| Glycol | % | *ASTM D2982 | | ⬢ **0.10** | NEG | NEG |
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | ▲ **11.5** | 13.5 | 13.7 |

**Customer Id:** GFL837
**Sample No.:** GFL0090643
**Lab Number:** 05938070
**Test Package:** FLEET

*To manage this report scan the QR code*

*To discuss the diagnosis or test data:*
Doug Bogart +1 (800)237-1369 x4016
dougb@wearcheckusa.com

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

## RECOMMENDED ACTIONS

| Action | Status | Date | Done By | Description |
|---|---|---|---|---|
| Change Fluid | --- | --- | ? | We recommend that you drain the oil and perform a filter service on this component if not already done. |
| Change Filter | --- | --- | ? | We recommend that you drain the oil and perform a filter service on this component if not already done. |
| Resample | --- | --- | ? | We recommend an early resample to monitor this condition. |
| Check Fuel/injector System | --- | --- | ? | We advise that you check the fuel injection system. |
| Check Glycol Access | --- | --- | ? | We advise that you check for the source of the coolant leak. |

## HISTORICAL DIAGNOSIS

**23 May 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

**21 Apr 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

**21 Mar 2023 Diag: Wes Davis**

NORMAL

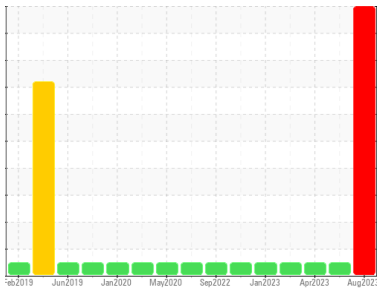
Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. Please specify the brand, type, and viscosity of the oil on your next sample.All component wear rates are normal. There is no indication of 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

# OIL ANALYSIS REPORT

Machine Id
**929087-260320**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (--- GAL)**

Sample Rating Trend




**GLYCOL**

## DIAGNOSIS

**Recommendation**
We advise that you check the fuel injection system. We advise that you check for the source of the coolant leak. We recommend that you drain the oil and perform a filter service on this component if not already done. We recommend an early resample to monitor this condition.

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

**Contamination**
Sodium and/or potassium levels are high. Test for glycol is positive. There is a high amount of fuel present in the oil.

**Fluid Condition**
Fuel is present in the oil and is lowering the viscosity. The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **GFL0090643** | GFL0070163 | GFL0070421 |
| Sample Date | | Client Info | | **17 Aug 2023** | 23 May 2023 | 21 Apr 2023 |
| Machine Age | hrs | Client Info | | **25597** | 25817 | 25021 |
| Oil Age | hrs | Client Info | | **0** | 0 | 0 |
| Oil Changed | | Client Info | | **Not Changd** | Not Changd | Not Changd |
| Sample Status | | | | **SEVERE** | NORMAL | NORMAL |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >120 | **21** | 6 | 4 |
| Chromium | ppm | ASTM D5185m | >20 | **1** | <1 | 0 |
| Nickel | ppm | ASTM D5185m | >5 | **<1** | <1 | 0 |
| Titanium | ppm | ASTM D5185m | >2 | **0** | <1 | 0 |
| Silver | ppm | ASTM D5185m | >2 | **0** | <1 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | **4** | 2 | 2 |
| Lead | ppm | ASTM D5185m | >40 | **<1** | <1 | 0 |
| Copper | ppm | ASTM D5185m | >330 | **18** | 1 | 0 |
| Tin | ppm | ASTM D5185m | >15 | **<1** | <1 | 0 |
| Vanadium | ppm | ASTM D5185m | | **0** | <1 | <1 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 0 | **72** | 0 | 0 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 60 | **100** | 58 | 57 |
| Manganese | ppm | ASTM D5185m | 0 | **<1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 1010 | **847** | 1000 | 926 |
| Calcium | ppm | ASTM D5185m | 1070 | **939** | 1114 | 1069 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **960** | 1069 | 1017 |
| Zinc | ppm | ASTM D5185m | 1270 | **1160** | 1303 | 1255 |
| Sulfur | ppm | ASTM D5185m | 2060 | **3568** | 3629 | 3438 |

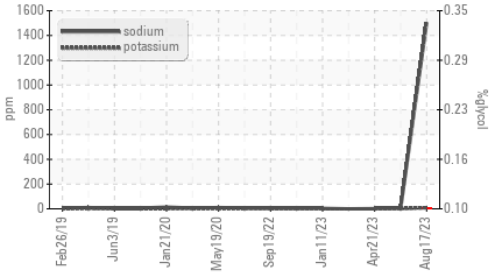
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | ▲ **25** | 5 | 3 |
| Sodium | ppm | ASTM D5185m | | ▲ **1503** | 4 | 2 |
| Potassium | ppm | ASTM D5185m | >20 | **8** | 2 | 0 |
| Fuel | % | ASTM D3524 | >3.0 | ⬢ **13.4** | <1.0 | <1.0 |
| Glycol | % | *ASTM D2982 | | ⬢ **0.10** | NEG | NEG |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >4 | **0.3** | 0.4 | 0.2 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **9.8** | 8.7 | 6.6 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **17.7** | 19.3 | 18.2 |

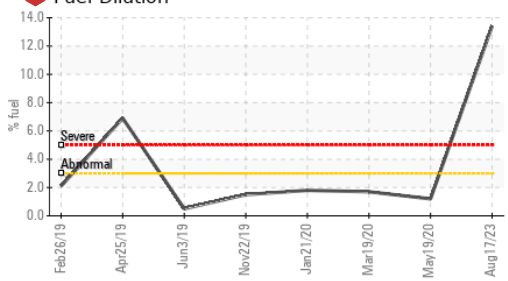
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **13.2** | 15.4 | 14.7 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **12.7** | 8.6 | 8.7 |

# OIL ANALYSIS REPORT

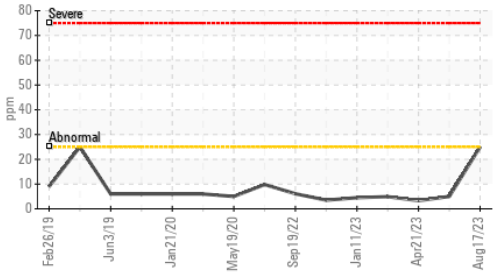
Glycol Contamination



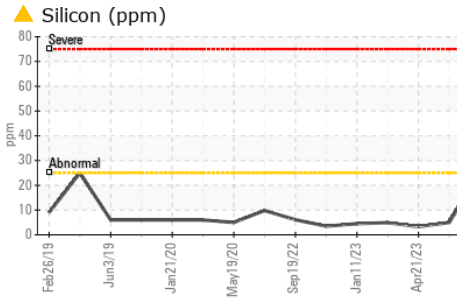

Fuel Dilution



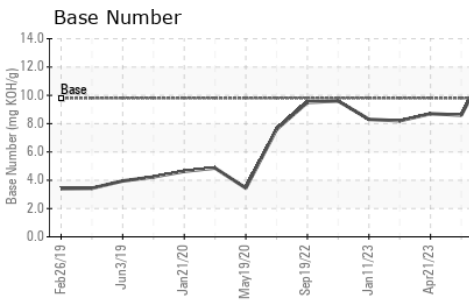

Silicon (ppm)




Silicon (ppm)




Base Number

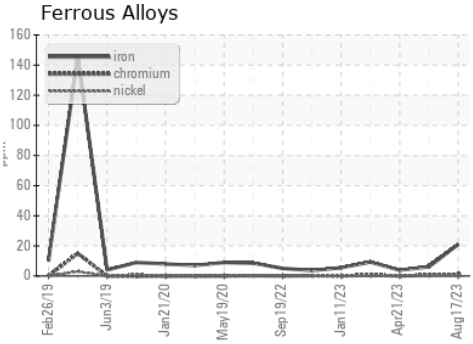



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| 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 |

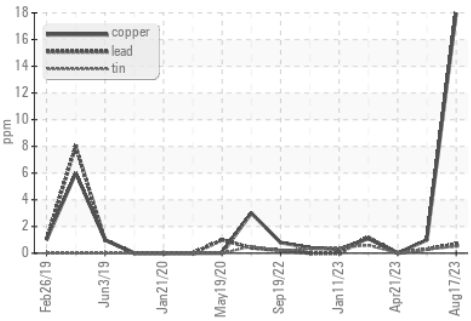
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | ▲ **11.5** | 13.5 | 13.7 |

## GRAPHS

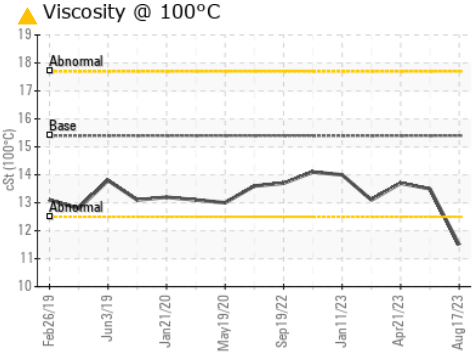
Ferrous Alloys



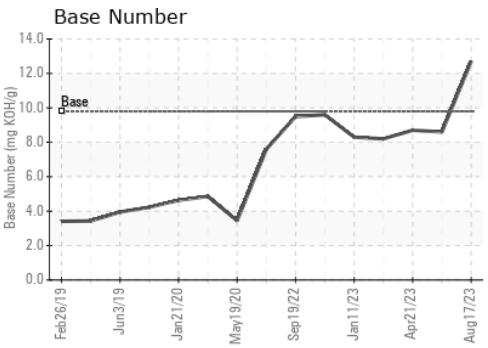

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0090643 **Received** : 30 Aug 2023
**Lab Number** : 05938070 **Diagnosed** : 01 Sep 2023
**Unique Number** : 10628682 **Diagnostician** : Doug Bogart
**Test Package** : FLEET ( Additional Tests: FuelDilution, Glycol, 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)*

**GFL Environmental - 837 - Harrison TS**
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T:
F:

Report Id: GFL837 [WUSCAR] 05938070 (Generated: 09/01/2023 09:50:18) Rev: 1

Submitted By: ?