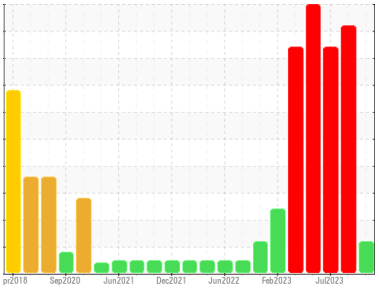
# PROBLEM SUMMARY

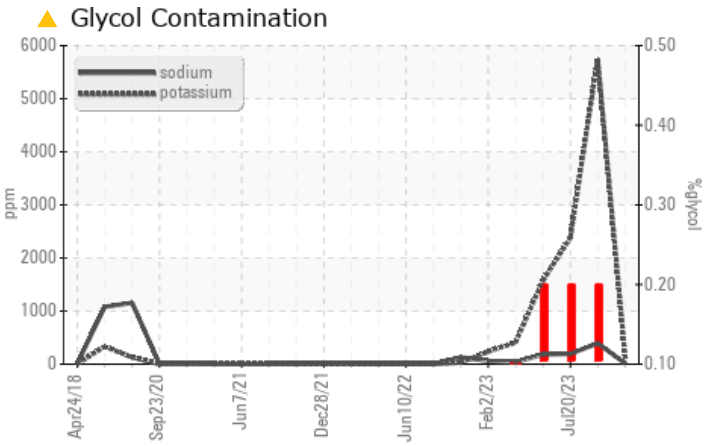
Machine Id
**10833**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (46 GAL)**

**Sample Rating Trend**




**GLYCOL**

## COMPONENT CONDITION SUMMARY




## RECOMMENDATION

No corrective action is recommended at this time. We recommend an early resample to monitor this condition.

## PROBLEMATIC TEST RESULTS

| Sample Status | | | | **ABNORMAL** | SEVERE | SEVERE |
|---|---|---|---|---|---|---|
| Potassium | ppm | ASTM D5185m | >20 | ▲ **148** | ▲ 5745 | ▲ 2381 |

**Customer Id:** GFL018
**Sample No.:** GFL0099811
**Lab Number:** 06016233
**Test Package:** FLEET

*To manage this report scan the QR code*

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jhester@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 |
|---|---|---|---|---|
| Resample | --- | --- | ? | We recommend an early resample to monitor this condition. |

## HISTORICAL DIAGNOSIS

**04 Aug 2023 Diag: Jonathan Hester**

GLYCOL

We advise that you check for the source of the coolant leak. Check for low coolant level. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.The copper level is abnormal. In the absence of other significant wear metals, suspect copper due to sources other than wear (i.e. cooling core). Sodium and/or potassium levels are high. There is a high concentration of glycol present in the oil. 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.

view report

**20 Jul 2023 Diag: Doug Bogart**

GLYCOL

We advise that you check for the source of the coolant leak. The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.All component wear rates are normal. Test for glycol is positive. There is a high concentration of glycol present in the oil. 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.

view report

**04 Jul 2023 Diag: Don Baldridge**

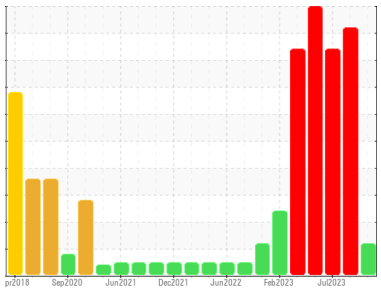
GLYCOL

We advise that you check for the source of the coolant leak. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.Piston, ring and cylinder wear is indicated. Sodium and/or potassium levels are high. Test for glycol is positive. There is a high concentration of glycol present in the oil. The oil is no longer serviceable due to the presence of contaminants.

view report

# OIL ANALYSIS REPORT

Sample Rating Trend




**GLYCOL**

Machine Id
**10833**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (46 GAL)**

## DIAGNOSIS

**Recommendation**
No corrective action is recommended at this time. 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 negative.

**Fluid Condition**
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **GFL0099811** | GFL0080576 | GFL0080601 |
| Sample Date | | Client Info | | **22 Nov 2023** | 04 Aug 2023 | 20 Jul 2023 |
| Machine Age | hrs | Client Info | | **16452** | 9541 | 9541 |
| Oil Age | hrs | Client Info | | **9541** | 9541 | 9541 |
| Oil Changed | | Client Info | | **N/A** | Changed | Changed |
| Sample Status | | | | **ABNORMAL** | SEVERE | SEVERE |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >3.0 | **<1.0** | <1.0 | <1.0 |
| Water | | WC Method | >0.2 | **NEG** | NEG | NEG |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >75 | **25** | 63 | 59 |
| Chromium | ppm | ASTM D5185m | >5 | **1** | 3 | 3 |
| Nickel | ppm | ASTM D5185m | >4 | **<1** | 2 | <1 |
| Titanium | ppm | ASTM D5185m | >2 | **<1** | <1 | 0 |
| Silver | ppm | ASTM D5185m | >2 | **<1** | <1 | <1 |
| Aluminum | ppm | ASTM D5185m | >15 | **4** | 7 | 8 |
| Lead | ppm | ASTM D5185m | >25 | **0** | 0 | 0 |
| Copper | ppm | ASTM D5185m | >100 | **16** | ▲ 223 | 83 |
| Tin | ppm | ASTM D5185m | >4 | **0** | <1 | 0 |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 0 | **8** | 16 | 11 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | <1 |
| Molybdenum | ppm | ASTM D5185m | 60 | **67** | 51 | 64 |
| Manganese | ppm | ASTM D5185m | 0 | **0** | 2 | <1 |
| Magnesium | ppm | ASTM D5185m | 1010 | **798** | 577 | 883 |
| Calcium | ppm | ASTM D5185m | 1070 | **1269** | 958 | 1082 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **1027** | 867 | 1064 |
| Zinc | ppm | ASTM D5185m | 1270 | **1266** | 1018 | 1286 |
| Sulfur | ppm | ASTM D5185m | 2060 | **3289** | 2452 | 3834 |

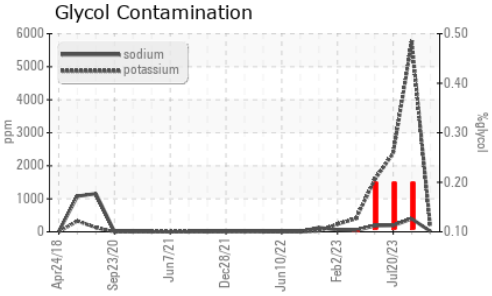
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **6** | 12 | 8 |
| Sodium | ppm | ASTM D5185m | | **14** | ▲ 394 | ▲ 193 |
| Potassium | ppm | ASTM D5185m | >20 | ▲ **148** | ▲ 5745 | ▲ 2381 |
| Glycol | % | *ASTM D2982 | | **NEG** | ⬢ 0.20 | ⬢ 0.20 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >6 | **0.4** | 0.5 | 0.2 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **8.5** | 14.3 | 8.2 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **19.7** | 21.8 | 18.6 |

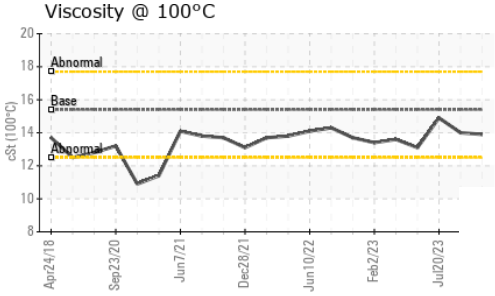
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **15.9** | 15.7 | 13.8 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **5.9** | 11.3 | 11.7 |

# OIL ANALYSIS REPORT

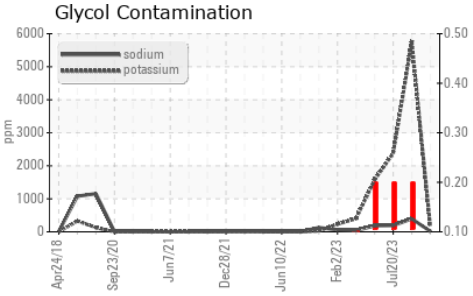
Glycol Contamination




Viscosity @ 100°C




Glycol Contamination

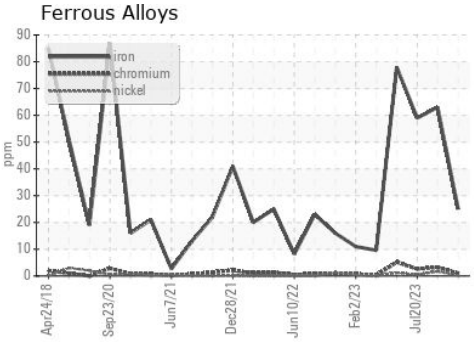



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

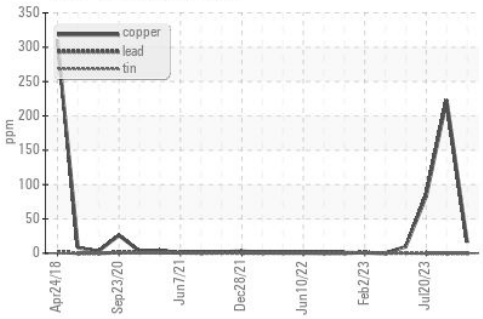
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | **13.9** | 14.0 | 14.9 |

## GRAPHS

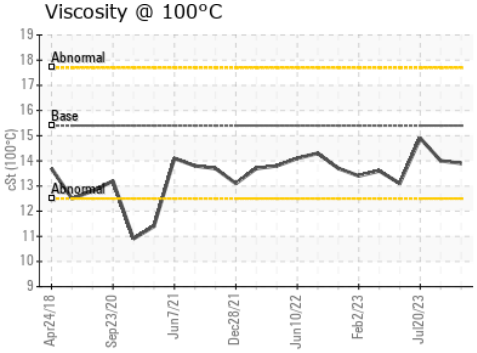
Ferrous Alloys



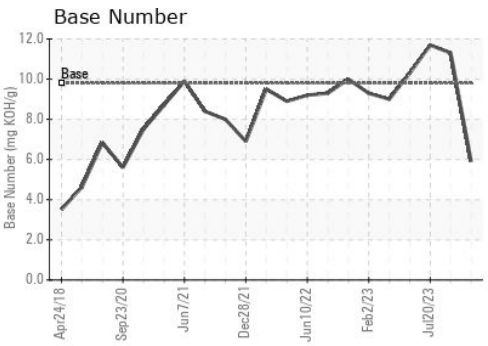

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0099811
**Lab Number** : 06016233
**Unique Number** : 10755377
**Test Package** : FLEET

**Received** : 24 Nov 2023
**Diagnosed** : 28 Nov 2023
**Diagnostician** : Jonathan Hester

*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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Report Id: GFL018 [WUSCAR] 06016233 (Generated: 11/30/2023 02:35:17) Rev: 1

Submitted By: Robert Carter