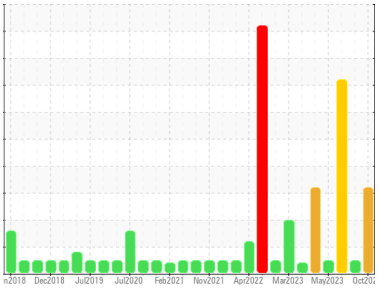
# PROBLEM SUMMARY

Sample Rating Trend

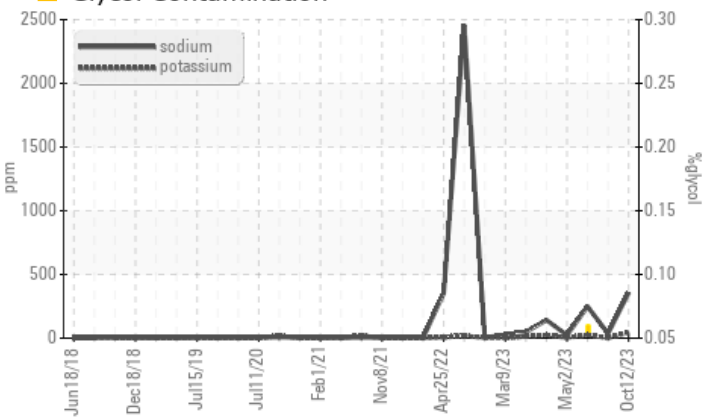


**GLYCOL**

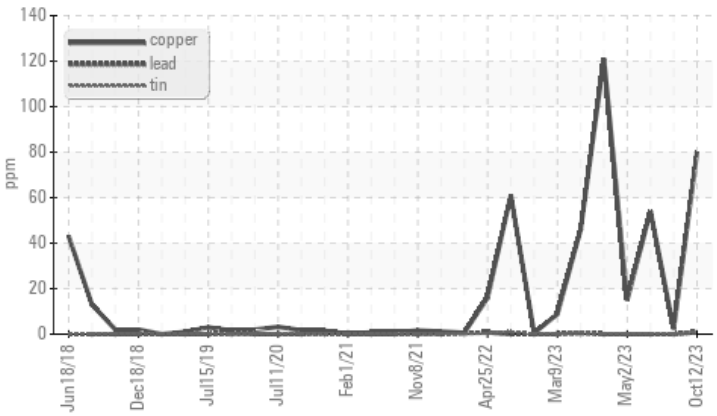
Machine Id
**10857**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (13 GAL)**

## COMPONENT CONDITION SUMMARY

▲ Glycol Contamination




▲ Non-ferrous Metals




## RECOMMENDATION

We advise that you check for the source of the coolant leak. Check for low coolant level. We recommend an early resample to monitor this condition.

## PROBLEMATIC TEST RESULTS

| Sample Status | | | | **ABNORMAL** | NORMAL | SEVERE |
|---|---|---|---|---|---|---|
| Copper | ppm | ASTM D5185m | >100 | ▲ **80** | 2 | 54 |
| Sodium | ppm | ASTM D5185m | | ▲ **356** | 36 | ▲ 249 |
| Potassium | ppm | ASTM D5185m | >20 | ▲ **43** | 2 | ▲ 25 |


**Customer Id:** GFL010
**Sample No.:** GFL0097864
**Lab Number:** 05986047
**Test Package:** FLEET

*To manage this report scan the QR code*

*To discuss the diagnosis or test data:*
Jonathan Hester +1 919-379-4092 x4092
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. |
| Check Glycol Access | --- | --- | ? | We advise that you check for the source of the coolant leak. |

## HISTORICAL DIAGNOSIS

**19 Sep 2023 Diag: Jonathan Hester**

NORMAL

Resample at the next service interval to monitor.All component wear rates are normal. Fuel content negligible. 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

**05 Jun 2023 Diag: Wes Davis**

GLYCOL

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 from the component if this has not already been done. We advise that you flush the component thoroughly before re-filling with oil. We recommend an early resample to monitor this condition.All component wear rates are normal. Test for glycol is positive. There is a high amount of fuel present in the oil. There is a moderate concentration of glycol present in the oil. Tests confirm the presence of fuel in the oil. 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.

view report

**02 May 2023 Diag: Wes Davis**

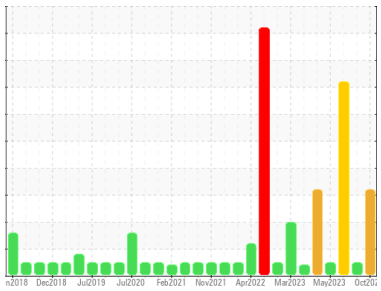
NORMAL

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

# OIL ANALYSIS REPORT

Sample Rating Trend



**GLYCOL**

Machine Id
**10857**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (13 GAL)**

## DIAGNOSIS

**Recommendation**
We advise that you check for the source of the coolant leak. Check for low coolant level. We recommend an early resample to monitor this condition.

**Wear**
The copper level is abnormal. All other component wear rates are normal.

**Contamination**
Sodium and/or potassium levels are high.

**Fluid Condition**
The BN result indicates that there is suitable alkalinity remaining in the oil.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **GFL0097864** | GFL0094374 | GFL0083235 |
| Sample Date | | Client Info | | **12 Oct 2023** | 19 Sep 2023 | 05 Jun 2023 |
| Machine Age | hrs | Client Info | | **967** | 830 | 558 |
| Oil Age | hrs | Client Info | | **137** | 495 | 221 |
| Oil Changed | | Client Info | | **Not Changd** | Not Changd | Not Changd |
| Sample Status | | | | **ABNORMAL** | NORMAL | SEVERE |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >3.0 | **<1.0** | 0.4 | 6.3 |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >75 | **8** | 2 | 32 |
| Chromium | ppm | ASTM D5185m | >5 | **<1** | <1 | 1 |
| Nickel | ppm | ASTM D5185m | >4 | **<1** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | >2 | **<1** | 0 | <1 |
| Silver | ppm | ASTM D5185m | >2 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >15 | **2** | 2 | 3 |
| Lead | ppm | ASTM D5185m | >25 | **<1** | 0 | 0 |
| Copper | ppm | ASTM D5185m | >100 | **80** | 2 | 54 |
| Tin | ppm | ASTM D5185m | >4 | **<1** | 0 | 0 |
| Vanadium | ppm | ASTM D5185m | | **0** | <1 | 0 |
| Cadmium | ppm | ASTM D5185m | | **<1** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 0 | **15** | 14 | 15 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 60 | **64** | 49 | 60 |
| Manganese | ppm | ASTM D5185m | 0 | **1** | 0 | <1 |
| Magnesium | ppm | ASTM D5185m | 1010 | **768** | 642 | 679 |
| Calcium | ppm | ASTM D5185m | 1070 | **899** | 850 | 993 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **796** | 733 | 787 |
| Zinc | ppm | ASTM D5185m | 1270 | **1040** | 889 | 1008 |
| Sulfur | ppm | ASTM D5185m | 2060 | **2518** | 2566 | 2788 |

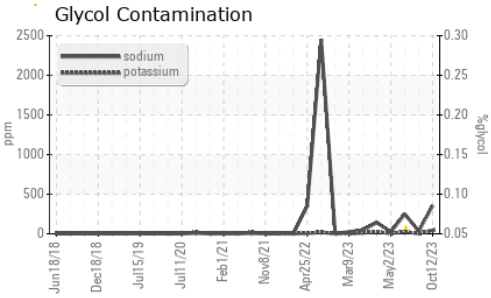
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **9** | 5 | 12 |
| Sodium | ppm | ASTM D5185m | | **356** | 36 | 249 |
| Potassium | ppm | ASTM D5185m | >20 | **43** | 2 | 25 |
| Glycol | % | *ASTM D2982 | | **NEG** | NEG | 0.06 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >6 | **0.3** | 0.1 | 1.2 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **6.3** | 4.3 | 9.9 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **16.6** | 16.2 | 21.2 |

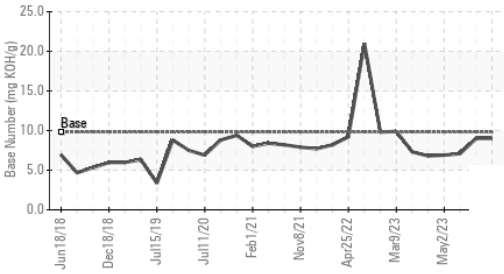
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **11.5** | 11.4 | 15.6 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **9.0** | 9.0 | 7.1 |

# OIL ANALYSIS REPORT

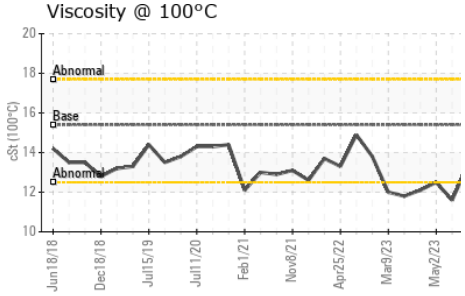
Glycol Contamination



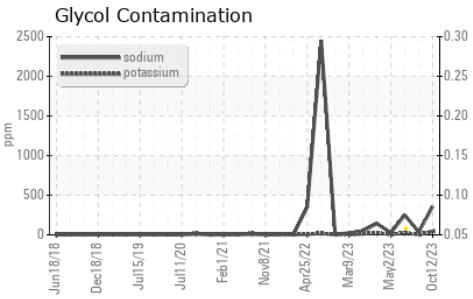

Base Number




Viscosity @ 100°C




Glycol Contamination

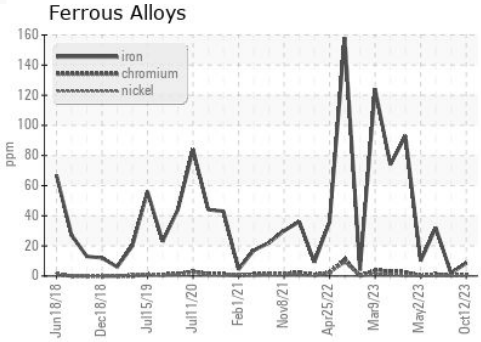



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

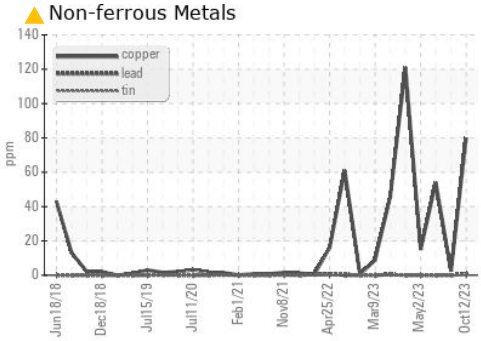
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | **12.7** | 13.4 | ▲ 11.6 |

## GRAPHS

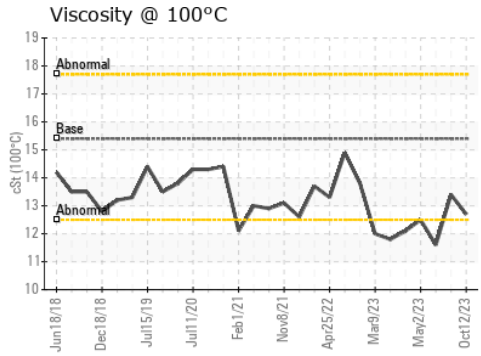
Ferrous Alloys



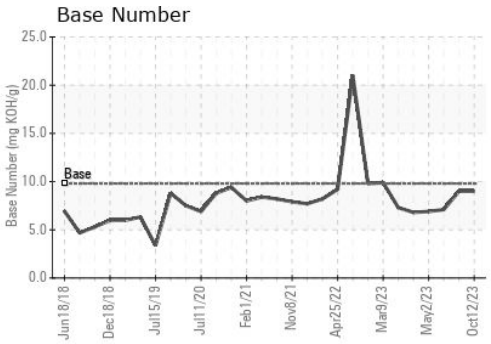

▲ Non-ferrous Metals




Viscosity @ 100°C




Base Number




**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0097864 **Received** : 23 Oct 2023
**Lab Number** : 05986047 **Diagnosed** : 25 Oct 2023
**Unique Number** : 10708709 **Diagnostician** : Jonathan Hester
**Test Package** : FLEET ( Additional Tests: Glycol )

Certificate L2367

*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: GFL010 [WUSCAR] 05986047 (Generated: 10/29/2023 17:24:50) Rev: 1

Submitted By: JOSHUA TINKER