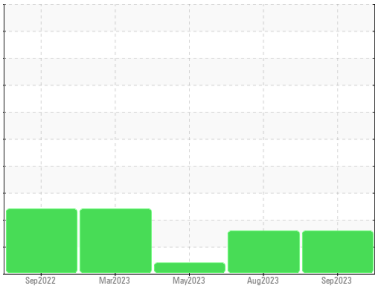
# PROBLEM SUMMARY

Sample Rating Trend

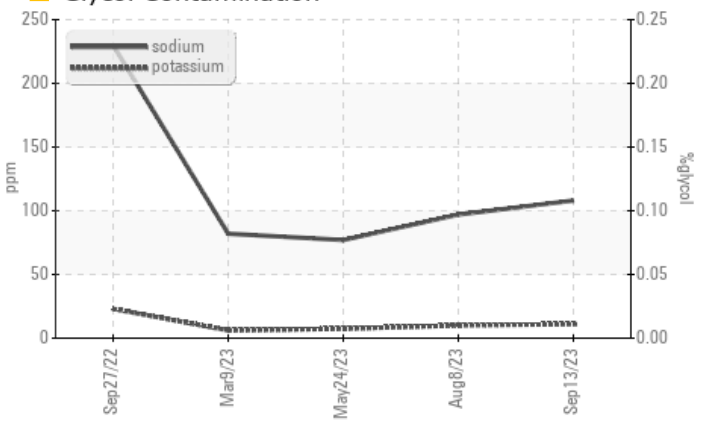



**GLYCOL**

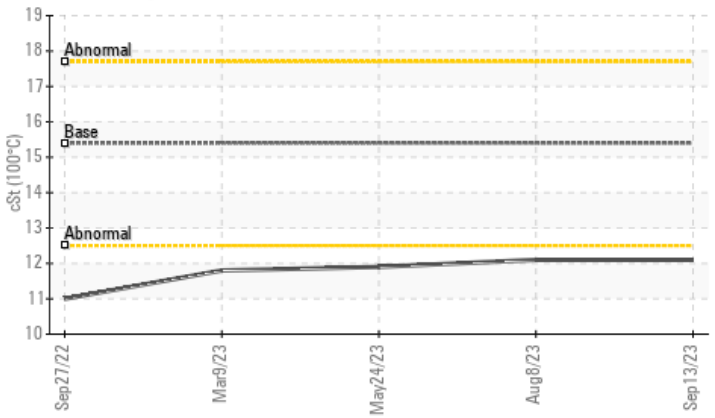
Machine Id
**227108-249**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (--- GAL)**

## COMPONENT CONDITION SUMMARY

▲ Glycol Contamination




▲ Viscosity @ 100°C




## RECOMMENDATION

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

## PROBLEMATIC TEST RESULTS

| Sample Status | | | | ATTENTION | ATTENTION | ATTENTION |
|---|---|---|---|---|---|---|
| Sodium | ppm | ASTM D5185m | | ▲ **108** | ▲ 97 | 77 |
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | ▲ **12.1** | ▲ 12.1 | ▲ 11.9 |

**Customer Id:** GFL166
**Sample No.:** GFL0087885
**Lab Number:** 05953766
**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 |
|---|---|---|---|---|
| Change Fluid | --- | --- | ? | Oil and filter change at the time of sampling has been noted. |
| Change Filter | --- | --- | ? | Oil and filter change at the time of sampling has been noted. |

## HISTORICAL DIAGNOSIS

**08 Aug 2023 Diag: Jonathan Hester**

GLYCOL

No corrective action is recommended at this time. Resample at the next service interval to monitor.All component wear rates are normal. Sodium and/or potassium levels are high. Test for glycol is negative. 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

**24 May 2023 Diag: Jonathan Hester**

VISCOSITY

No corrective action is recommended at this time. 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 oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

view report

**09 Mar 2023 Diag: Jonathan Hester**

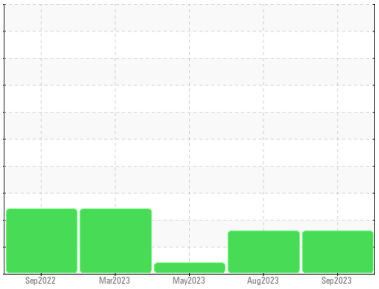
GLYCOL

No corrective action is recommended at this time. Resample at the next service interval to monitor.All component wear rates are normal. Sodium and/or potassium levels remain high. Light fuel dilution occurring. Fuel is present in the oil and is lowering the viscosity. The BN result indicates that there is suitable alkalinity remaining in the oil.

view report

# OIL ANALYSIS REPORT

Sample Rating Trend




**GLYCOL**

Machine Id
**227108-249**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (--- GAL)**

## DIAGNOSIS

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

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

**Contamination**
Sodium and/or potassium levels remain high. Test for glycol is negative.

**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 | | **GFL0087885** | GFL0087825 | GFL0081204 |
| Sample Date | | Client Info | | **13 Sep 2023** | 08 Aug 2023 | 24 May 2023 |
| Machine Age | hrs | Client Info | | **4429** | 4429 | 4399 |
| Oil Age | hrs | Client Info | | **600** | 200 | 600 |
| Oil Changed | | Client Info | | **Changed** | Not Changd | Not Changd |
| Sample Status | | | | **ATTENTION** | ATTENTION | ATTENTION |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >5 | **<1.0** | <1.0 | <1.0 |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >100 | **24** | 26 | 15 |
| Chromium | ppm | ASTM D5185m | >20 | **<1** | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >4 | **1** | <1 | <1 |
| Titanium | ppm | ASTM D5185m | | **1** | 1 | <1 |
| Silver | ppm | ASTM D5185m | >3 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | **6** | 5 | 3 |
| Lead | ppm | ASTM D5185m | >40 | **2** | 2 | <1 |
| Copper | ppm | ASTM D5185m | >330 | **2** | 2 | 2 |
| Tin | ppm | ASTM D5185m | >15 | **<1** | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | **0** | <1 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 0 | **302** | 330 | 335 |
| Barium | ppm | ASTM D5185m | 0 | **2** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 60 | **79** | 76 | 75 |
| Manganese | ppm | ASTM D5185m | 0 | **<1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 1010 | **398** | 428 | 426 |
| Calcium | ppm | ASTM D5185m | 1070 | **1396** | 1456 | 1438 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **990** | 962 | 1003 |
| Zinc | ppm | ASTM D5185m | 1270 | **1129** | 1191 | 1191 |
| Sulfur | ppm | ASTM D5185m | 2060 | **3257** | 3723 | 3852 |

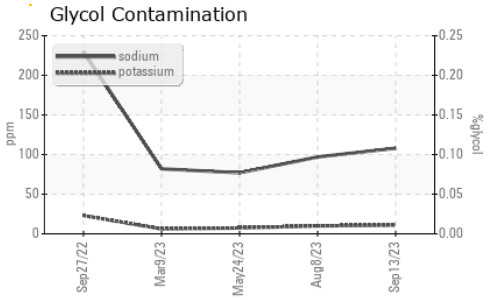
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **13** | 12 | 11 |
| Sodium | ppm | ASTM D5185m | | ▲ **108** | ▲ 97 | 77 |
| Potassium | ppm | ASTM D5185m | >20 | **11** | 10 | 7 |
| Glycol | % | *ASTM D2982 | | **NEG** | NEG | NEG |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.9** | 0.9 | 0.3 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **7.9** | 7.5 | 7.2 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **21.8** | 21.1 | 20.8 |

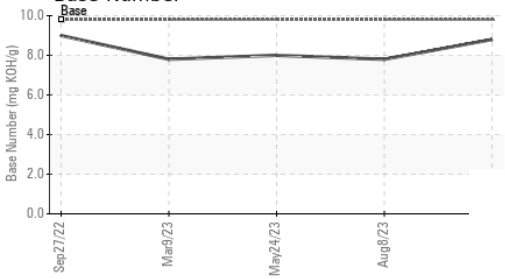
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **14.8** | 14.2 | 14.9 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **8.8** | 7.8 | 8.0 |

# OIL ANALYSIS REPORT

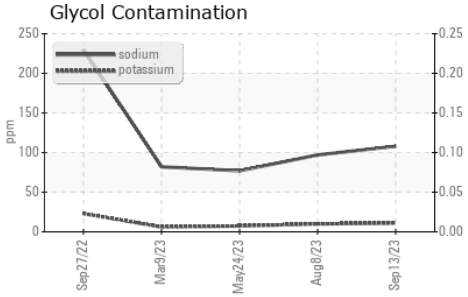
Glycol Contamination




Base Number




Glycol Contamination

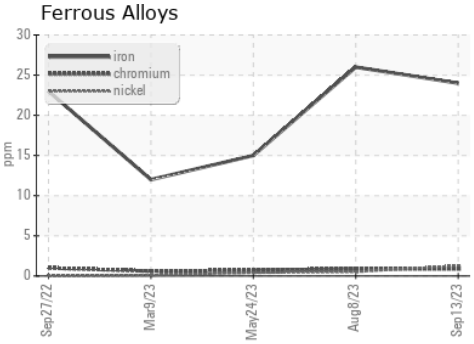



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

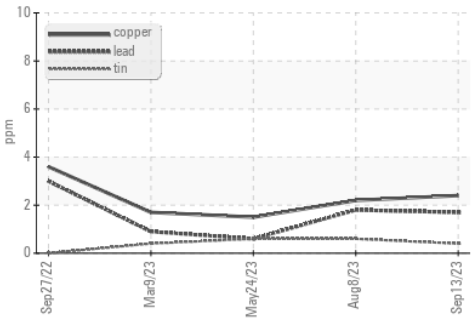
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | ▲ **12.1** | ▲ 12.1 | ▲ 11.9 |

## GRAPHS

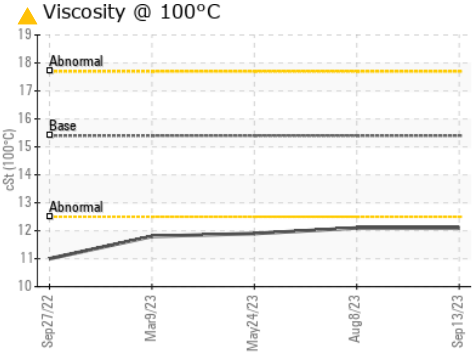
Ferrous Alloys



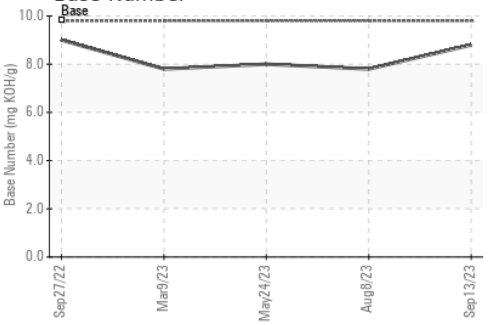

Non-ferrous Metals




▲ Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0087885 **Received** : 18 Sep 2023
**Lab Number** : 05953766 **Diagnosed** : 20 Sep 2023
**Unique Number** : 10654979 **Diagnostician** : Jonathan Hester
**Test Package** : FLEET ( Additional Tests: Glycol )

*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 - 166 - Phenix City**
18 Old Brickyard Rd
Phenix City, AL
US 36869
Contact: DEAN PEACE JR
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Report Id: GFL166 [WUSCAR] 05953766 (Generated: 09/20/2023 13:59:28) Rev: 1

Submitted By: DARRIN WRIGHT