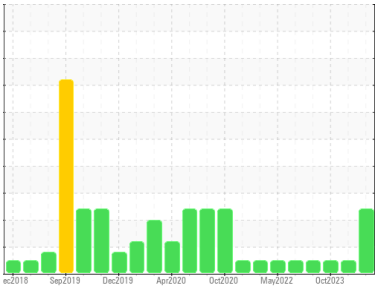
# PROBLEM SUMMARY

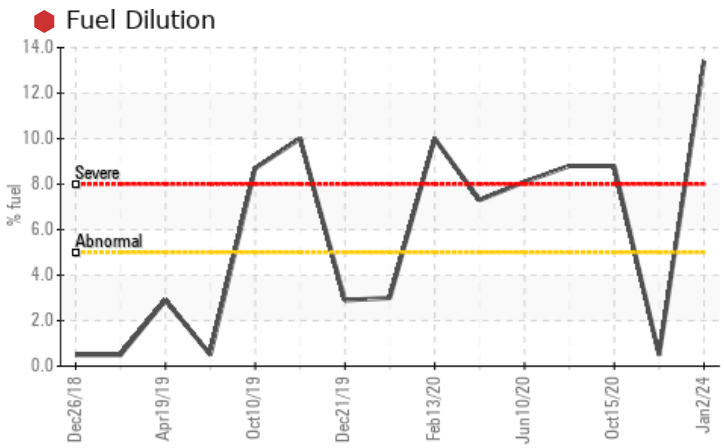
Sample Rating Trend

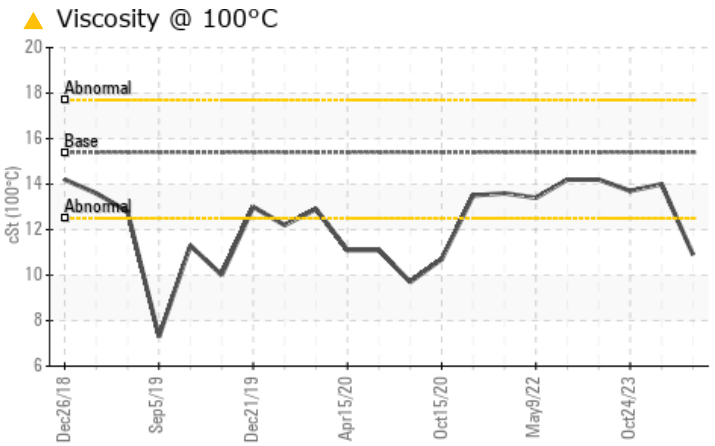


FUEL

Machine Id
**923031-260313**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (--- GAL)**

## COMPONENT CONDITION SUMMARY




## RECOMMENDATION

We advise that you check the fuel injection system. 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 |
|---|---|---|---|---|---|---|
| Fuel | % | ASTM D3524 | >5 | **13.4** | <1.0 | <1.0 |
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | **10.9** | 14.0 | 13.7 |

**Customer Id:** GFL836
**Sample No.:** GFL0103352
**Lab Number:** 06050619
**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 | --- | --- | ? | 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. |

## HISTORICAL DIAGNOSIS

**15 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

**24 Oct 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

**15 Jun 2023 Diag: Sean Felton**

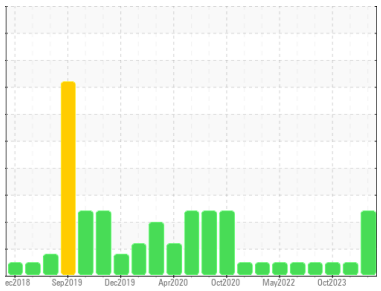
NORMAL

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 acceptable for the time in service.

view report

# OIL ANALYSIS REPORT

Sample Rating Trend



**FUEL**

Machine Id
## 923031-260313
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (--- GAL)**

## DIAGNOSIS

**Recommendation**
We advise that you check the fuel injection system. 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**
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 | | **GFL0103352** | GFL0099951 | GFL0095090 |
| Sample Date | | Client Info | | **02 Jan 2024** | 15 Nov 2023 | 24 Oct 2023 |
| Machine Age | hrs | Client Info | | **5646** | 5442 | 5415 |
| Oil Age | hrs | Client Info | | **0** | 1200 | 0 |
| Oil Changed | | Client Info | | **Not Changd** | Changed | Not Changd |
| Sample Status | | | | **SEVERE** | NORMAL | NORMAL |

| 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 | >110 | **42** | 6 | 10 |
| Chromium | ppm | ASTM D5185m | >4 | **2** | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >2 | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | **<1** | 0 | <1 |
| Silver | ppm | ASTM D5185m | >2 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >25 | **4** | 2 | 1 |
| Lead | ppm | ASTM D5185m | >45 | **2** | 0 | 0 |
| Copper | ppm | ASTM D5185m | >85 | **3** | <1 | <1 |
| Tin | ppm | ASTM D5185m | >4 | **2** | <1 | 0 |
| 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 | **2** | 5 | <1 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 60 | **56** | 60 | 57 |
| Manganese | ppm | ASTM D5185m | 0 | **<1** | <1 | 0 |
| Magnesium | ppm | ASTM D5185m | 1010 | **838** | 961 | 902 |
| Calcium | ppm | ASTM D5185m | 1070 | **958** | 1098 | 952 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **903** | 1072 | 944 |
| Zinc | ppm | ASTM D5185m | 1270 | **1069** | 1290 | 1236 |
| Sulfur | ppm | ASTM D5185m | 2060 | **2393** | 3144 | 2820 |

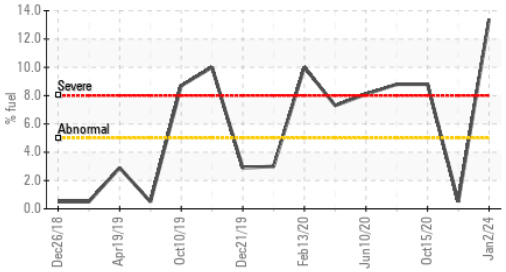
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >30 | **8** | 4 | 5 |
| Sodium | ppm | ASTM D5185m | | **4** | 17 | 14 |
| Potassium | ppm | ASTM D5185m | >20 | **<1** | 2 | 2 |
| Fuel | % | ASTM D3524 | >5 | **13.4** | <1.0 | <1.0 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **1.2** | 0.2 | 0.3 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **14.0** | 7.7 | 7.9 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **27.9** | 19.3 | 19.6 |

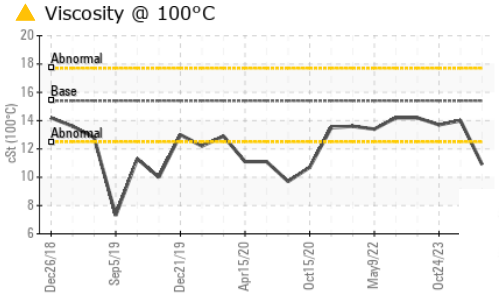
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **30.4** | 15.9 | 16.2 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **4.0** | 8.2 | 7.9 |

# OIL ANALYSIS REPORT

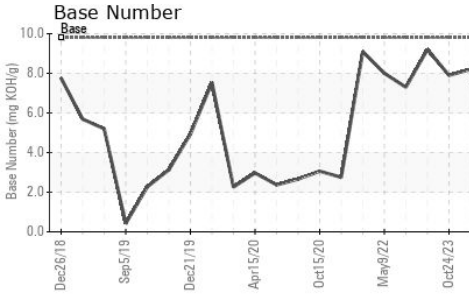
Fuel Dilution




Viscosity @ 100°C




Base Number

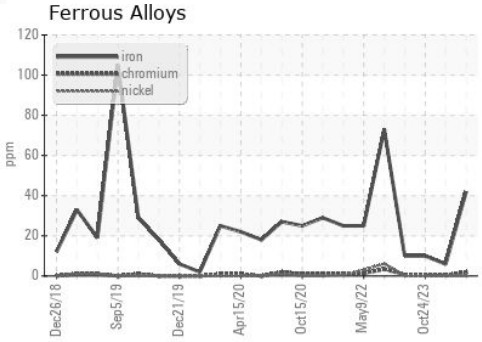



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

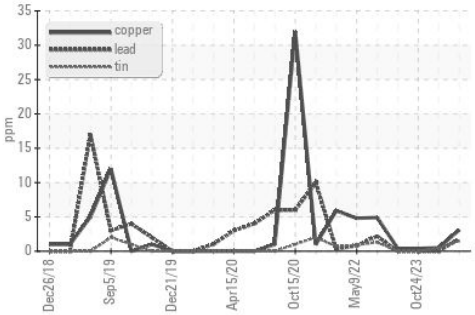
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | ▲ **10.9** | 14.0 | 13.7 |

## GRAPHS

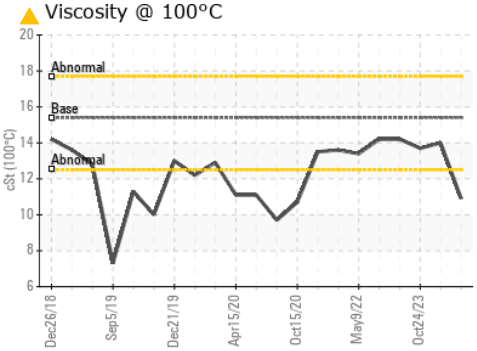
Ferrous Alloys



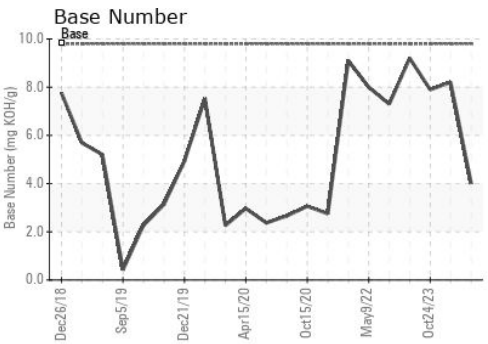

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0103352 **Recieved** : 04 Jan 2024
**Lab Number** : 06050619 **Diagnosed** : 08 Jan 2024
**Unique Number** : 10816568 **Diagnostician** : Jonathan Hester
**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)*

**GFL Environmental - 836 - Kansas City Hauling**
7801 East Truman Road
Kansas City, MO
US 64126
Contact: Robert Hart
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T: (580)461-1509
F:

Report Id: GFL836 [WUSCAR] 06050619 (Generated: 01/08/2024 16:01:26) Rev: 1

Contact/Location: See also GFL823, 834, 837, 840 - Robert Hart - GFL836