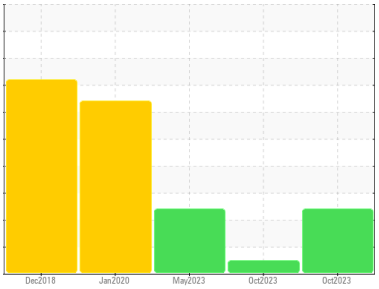
# PROBLEM SUMMARY

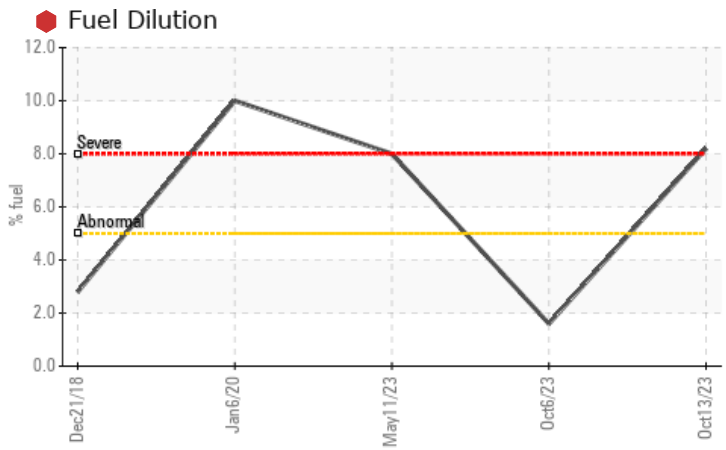
Sample Rating Trend

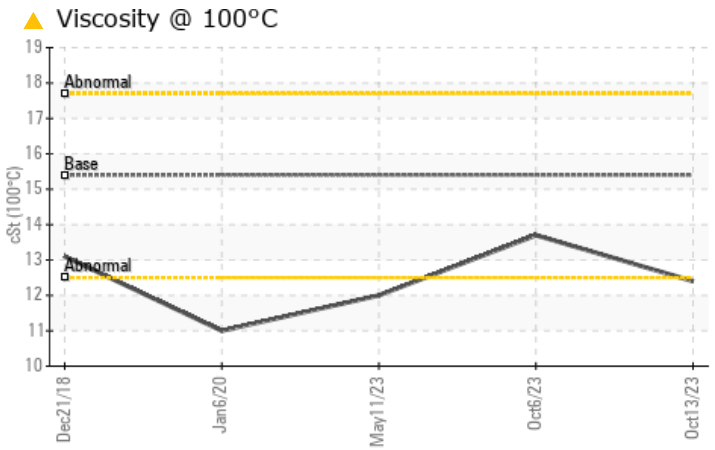



**FUEL**

Machine Id
**722028-361658**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (8 GAL)**

## COMPONENT CONDITION SUMMARY




## RECOMMENDATION

We advise that you check the fuel injection system. We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.

## PROBLEMATIC TEST RESULTS

| Sample Status | | | | SEVERE | NORMAL | SEVERE |
|---|---|---|---|---|---|---|
| Fuel | % | ASTM D3524 | >5 | **8.2** | 1.6 | 8.0 |
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | **12.4** | 13.7 | 12.0 |

**Customer Id:** GFL829
**Sample No.:** GFL0065473
**Lab Number:** 05982217
**Test Package:** FLEET

*To manage this report scan the QR code*

*To discuss the diagnosis or test data:*
Wes Davis +1 905-569-8600 x223
wesd@wearcheck.ca

*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 from the component if this has not already been 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

**06 Oct 2023 Diag: Wes Davis**

NORMAL

The oil change at the time of sampling has been noted. Resample at the next service interval to monitor. No other corrective action is recommended at this time.All component wear rates are normal. Light fuel dilution occurring. No other contaminants were detected 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

**11 May 2023 Diag: Wes Davis**

FUEL

We advise that you check the fuel injection system. 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. There is a high amount of fuel 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

**06 Jan 2020 Diag: Wes Davis**

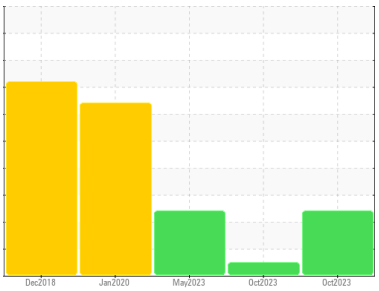
DEGRADATION

We advise that you check the fuel injection system. The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.Lead ppm levels are abnormal. Bearing wear is indicated. There is a high amount of fuel present in the oil. Tests confirm the presence of fuel in the oil. Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

view report

# OIL ANALYSIS REPORT

Sample Rating Trend




**FUEL**

Machine Id
## 722028-361658
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (8 GAL)**

## DIAGNOSIS

**Recommendation**

We advise that you check the fuel injection system. We recommend that you drain the oil from the component if this has not already been 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. Tests confirm the presence of fuel in the oil.

**Fluid Condition**

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.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **GFL0065473** | GFL0065498 | GFL0078545 |
| Sample Date | | Client Info | | **13 Oct 2023** | 06 Oct 2023 | 11 May 2023 |
| Machine Age | hrs | Client Info | | **18673** | 18523 | 18337 |
| Oil Age | hrs | Client Info | | **150** | 600 | 0 |
| Oil Changed | | Client Info | | **Not Changd** | Changed | Changed |
| Sample Status | | | | **SEVERE** | NORMAL | SEVERE |

| CONTAMINATION | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Glycol | WC Method | | **NEG** | NEG | NEG |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >100 | **18** | 48 | 35 |
| Chromium | ppm | ASTM D5185m | >20 | **1** | 2 | 1 |
| Nickel | ppm | ASTM D5185m | >4 | **0** | <1 | 0 |
| Titanium | ppm | ASTM D5185m | | **0** | 0 | <1 |
| Silver | ppm | ASTM D5185m | >3 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | **2** | 2 | <1 |
| Lead | ppm | ASTM D5185m | >40 | **0** | 2 | 0 |
| Copper | ppm | ASTM D5185m | >330 | **1** | 1 | 2 |
| Tin | ppm | ASTM D5185m | >15 | **0** | 2 | 0 |
| Antimony | ppm | ASTM D5185m | | **---** | --- | --- |
| 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 | **4** | 4 | 2 |
| Barium | ppm | ASTM D5185m | 0 | **<1** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 60 | **53** | 57 | 58 |
| Manganese | ppm | ASTM D5185m | 0 | **<1** | 1 | <1 |
| Magnesium | ppm | ASTM D5185m | 1010 | **866** | 936 | 897 |
| Calcium | ppm | ASTM D5185m | 1070 | **915** | 1037 | 1026 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **933** | 1043 | 922 |
| Zinc | ppm | ASTM D5185m | 1270 | **1127** | 1262 | 1146 |
| Sulfur | ppm | ASTM D5185m | 2060 | **2641** | 2996 | 2994 |
| Lithium | ppm | ASTM D5185m | | **---** | --- | --- |

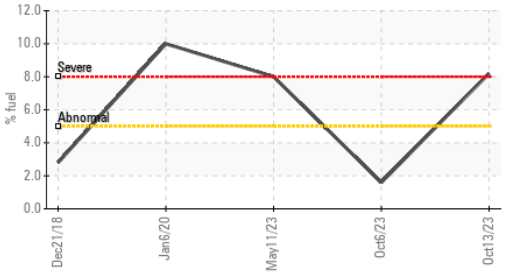
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **6** | 6 | 10 |
| Sodium | ppm | ASTM D5185m | | **3** | 3 | 6 |
| Potassium | ppm | ASTM D5185m | >20 | **0** | 2 | 2 |
| Fuel | % | ASTM D3524 | >5 | **8.2** | 1.6 | 8.0 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.9** | 1.5 | 1.1 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **10.0** | 9.0 | 11.8 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **21.2** | 21.0 | 21.9 |

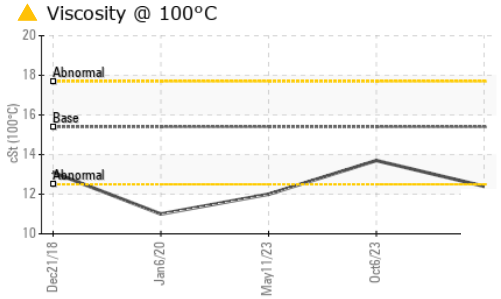
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **18.8** | 15.1 | 19.2 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **7.2** | 9.3 | 8.3 |

# OIL ANALYSIS REPORT

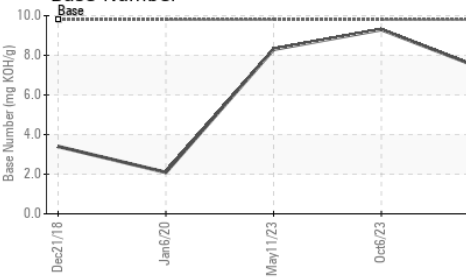
Fuel Dilution




Viscosity @ 100°C




Base Number

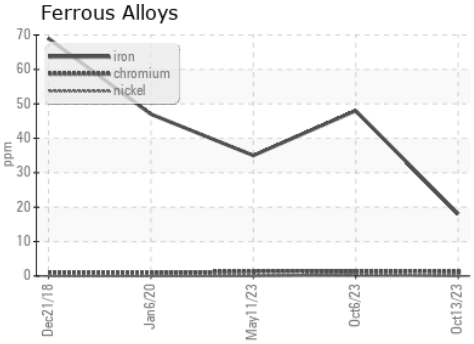



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

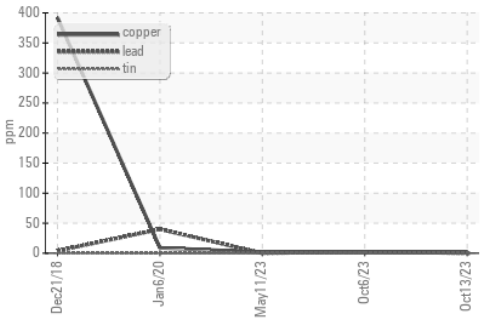
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | ▲ **12.4** | 13.7 | ▲ 12.0 |

## GRAPHS

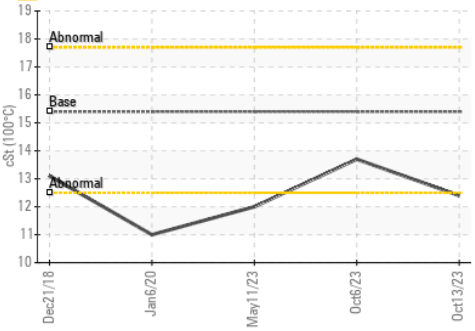
Ferrous Alloys



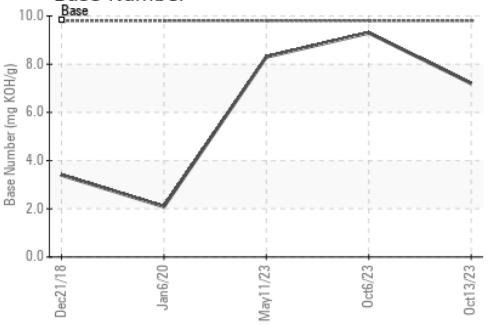

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0065473
**Lab Number** : 05982217
**Unique Number** : 10699512
**Test Package** : FLEET ( Additional Tests: FuelDilution, PercentFuel )

**Received** : 18 Oct 2023
**Diagnosed** : 19 Oct 2023
**Diagnostician** : Wes Davis

*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 - 829 - Wilco Hauling**
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Hartville, MO
US 65667
Contact: James Jones
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Report Id: GFL829 [WUSCAR] 05982217 (Generated: 10/19/2023 14:14:36) Rev: 1

Submitted By: Jerry Hazel