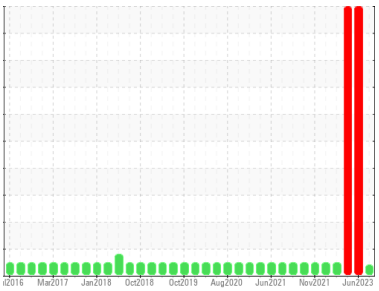
# PROBLEM SUMMARY

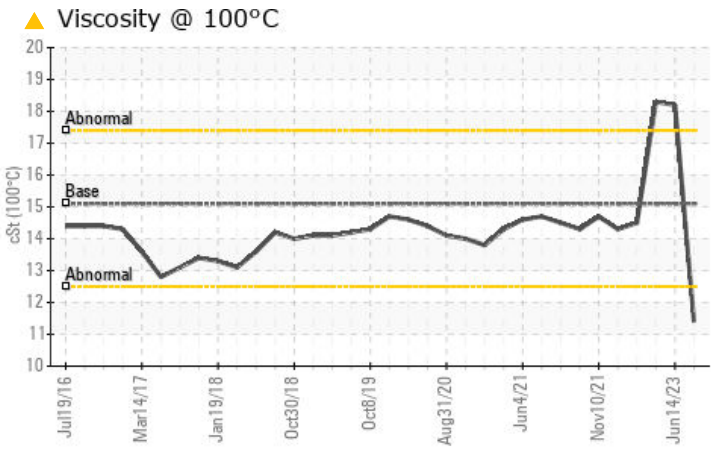
Sample Rating Trend



**VISCOSITY**

Machine Id
**2644C**
Component
**Natural Gas Engine**
Fluid
**PETRO CANADA DURON GEO LD 15W40 (42 GAL)**

## COMPONENT CONDITION SUMMARY




## RECOMMENDATION

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 | SEVERE | SEVERE |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.1 | ▲ **11.4** | ▲ 18.2 | ▲ 18.3 |

**Customer Id:** GFL005
**Sample No.:** GFL0092676
**Lab Number:** 06032159
**Test Package:** FLEET

*To manage this report scan the QR code*

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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

**14 Jun 2023 Diag: Jonathan Hester**

GLYCOL

We advise that you check for the source of the coolant leak. Check for low coolant level. We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. 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. Bearing and/or bushing wear is indicated. Valve wear is indicated. Sodium and/or potassium levels are high. Test for glycol is positive. Appearance is milky. There is a moderate concentration of water present in the oil. Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress. The oil is no longer serviceable due to the presence of contaminants.

view report

**24 Jan 2023 Diag: Jonathan Hester**

GLYCOL

We advise that you check for the source of the coolant leak. Check for low coolant level. We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. We recommend that you drain the oil and perform a filter service on this component if not already done. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.Piston, ring and cylinder wear is indicated. Bearing and/or bushing wear is indicated. Sodium and/or potassium levels are high. There is a high concentration of glycol present in the oil. Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress. The oil viscosity is higher than normal. The oil is no longer serviceable due to the presence of contaminants.

view report

**03 Mar 2022 Diag: Wes Davis**

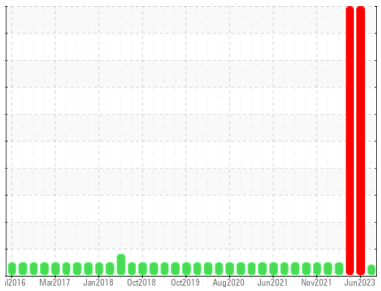
NORMAL

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



**VISCOSITY**

Machine Id
**2644C**
Component
**Natural Gas Engine**
Fluid
**PETRO CANADA DURON GEO LD 15W40 (42 GAL)**

## DIAGNOSIS

**Recommendation**
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**
There is no indication of any contamination in the oil.

**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 | | **GFL0092676** | GFL0072405 | GFL0072386 |
| Sample Date | | Client Info | | **08 Dec 2023** | 14 Jun 2023 | 24 Jan 2023 |
| Machine Age | hrs | Client Info | | **16461** | 16461 | 16191 |
| Oil Age | hrs | Client Info | | **698** | 701 | 16191 |
| Oil Changed | | Client Info | | **Changed** | Changed | Not Changd |
| Sample Status | | | | **ATTENTION** | SEVERE | SEVERE |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Water | | WC Method | >0.1 | **NEG** | NEG | NEG |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >50 | **43** | 536 | 115 |
| Chromium | ppm | ASTM D5185m | >4 | **1** | 25 | 20 |
| Nickel | ppm | ASTM D5185m | >2 | **<1** | 5 | 5 |
| Titanium | ppm | ASTM D5185m | | **<1** | 3 | 2 |
| Silver | ppm | ASTM D5185m | >3 | **<1** | <1 | <1 |
| Aluminum | ppm | ASTM D5185m | >9 | **3** | 51 | 28 |
| Lead | ppm | ASTM D5185m | >30 | **4** | 70 | 195 |
| Copper | ppm | ASTM D5185m | >35 | **4** | 65 | 20 |
| Tin | ppm | ASTM D5185m | >4 | **1** | 12 | 4 |
| Antimony | ppm | ASTM D5185m | | **---** | --- | --- |
| Vanadium | ppm | ASTM D5185m | | **0** | <1 | <1 |
| Cadmium | ppm | ASTM D5185m | | **<1** | <1 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 50 | **52** | 306 | 93 |
| Barium | ppm | ASTM D5185m | 5 | **0** | 0 | <1 |
| Molybdenum | ppm | ASTM D5185m | 50 | **63** | 348 | 337 |
| Manganese | ppm | ASTM D5185m | 0 | **1** | 5 | 2 |
| Magnesium | ppm | ASTM D5185m | 560 | **758** | 868 | 711 |
| Calcium | ppm | ASTM D5185m | 1510 | **1954** | 1184 | 1904 |
| Phosphorus | ppm | ASTM D5185m | 780 | **958** | 1058 | 1069 |
| Zinc | ppm | ASTM D5185m | 870 | **1159** | 1238 | 1184 |
| Sulfur | ppm | ASTM D5185m | 2040 | **2819** | 4191 | 3512 |

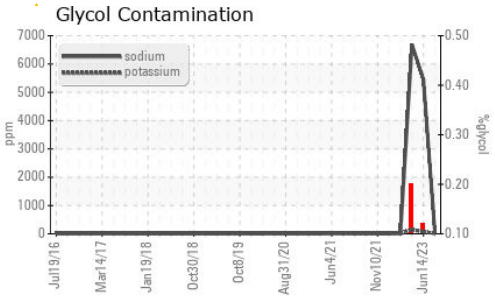
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >+100 | **13** | 365 | 246 |
| Sodium | ppm | ASTM D5185m | | **25** | 5447 | 6691 |
| Potassium | ppm | ASTM D5185m | >20 | **17** | 68 | 147 |
| Glycol | % | *ASTM D2982 | | **---** | 0.12 | 0.20 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | | **0.2** | 0.2 | 0.1 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **9.5** | 14.3 | 25.4 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **17.6** | 29.8 | 37.6 |

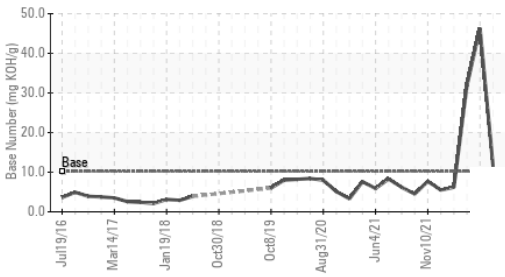
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **17.5** | 17.0 | 25.1 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 10.2 | **11.5** | 46.3 | 31.9 |

# OIL ANALYSIS REPORT

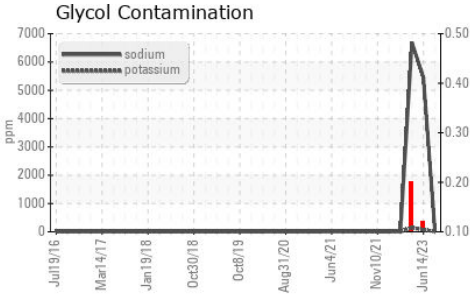
Glycol Contamination




Base Number




Glycol Contamination

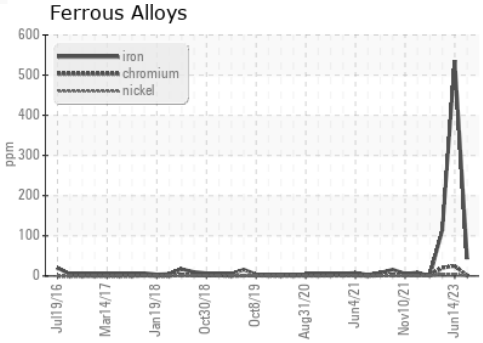



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| 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** | ▲ MILKY | NORML |
| Odor | scalar | *Visual | NORML | **NORML** | NORML | NORML |
| Emulsified Water | scalar | *Visual | >0.1 | **NEG** | 0.2% | NEG |
| Free Water | scalar | *Visual | | **NEG** | NEG | NEG |

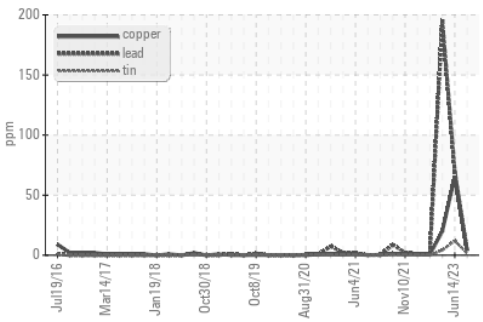
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.1 | ▲ **11.4** | ▲ 18.2 | ▲ 18.3 |

## GRAPHS

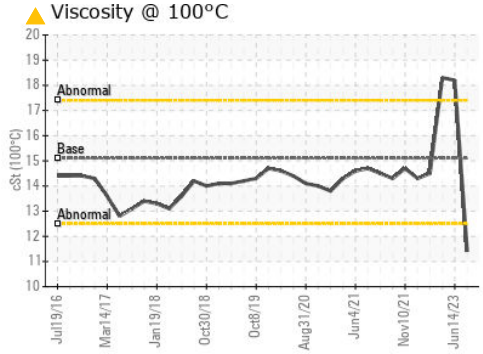
Ferrous Alloys



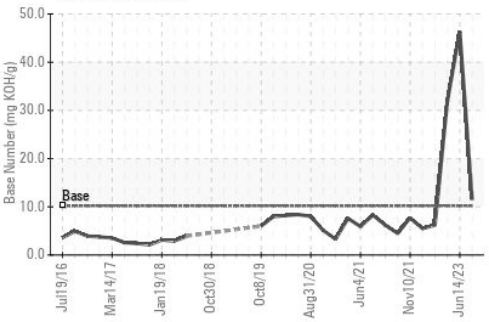

Non-ferrous Metals




▲ Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0092676
**Lab Number** : 06032159
**Unique Number** : 10781950
**Test Package** : FLEET

**Received** : 12 Dec 2023
**Diagnosed** : 14 Dec 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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