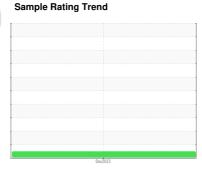


# **OIL ANALYSIS REPORT**



NORMAL



Machine Id **841001** 

Component **Natural Gas Engine** 

PETRO CANADA DURON GEO LD 15W40

### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

Metal levels are typical for a components first oil change.

#### Contamination

There is no indication of any contamination in the oil.

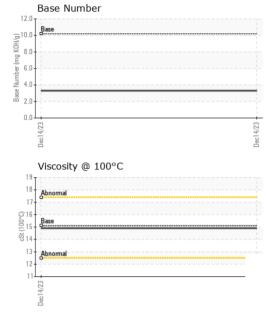
#### **Fluid Condition**

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| Sample Number   Client Info   GFL0102744  | GAL)             |          |             |            | Dec2023     |          |          |
|---|------------------|----------|-------------|------------|-------------|----------|----------|
| Comparison  | SAMPLE INFOR     | MATION   | method      | limit/base | current     | history1 | history2 |
| Machine Age   hrs   Client Info   5314       Client Info   5314       Client Info   5314       Client Info   5314       Changed       Changed     Chan  | Sample Number    |          | Client Info |            | GFL0102744  |          |          |
| Oil Changed   | Sample Date      |          | Client Info |            | 14 Dec 2023 |          |          |
| Contained   Client Info   Changed   Normal   Contained   Normal   Contained   Contained | Machine Age      | hrs      | Client Info |            | 5314        |          |          |
| CONTAMINATION   | Oil Age          | hrs      | Client Info |            | 5314        |          |          |
| CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >0.1         NEG  | Oil Changed      |          | Client Info |            | Changed     |          |          |
| Water         WC Method         >0.1         NEG            WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         14             Chromium         ppm         ASTM D5185m         >4         1             Nickel         ppm         ASTM D5185m         >2         <1             Titanium         ppm         ASTM D5185m         >3         0             Silver         ppm         ASTM D5185m         >9         6             Aluminum         ppm         ASTM D5185m         >9         6             Lead         ppm         ASTM D5185m         >9         6             Lead         ppm         ASTM D5185m         >9         6             Copper         ppm         ASTM D5185m         >35         <1             Cadmium         ppm         ASTM D5185m         >0 </td <td>Sample Status</td> <td></td> <td></td> <td></td> <td>NORMAL</td> <td></td> <td></td>   | Sample Status    |          |             |            | NORMAL      |          |          |
| WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         14             Chromium         ppm         ASTM D5185m         >4         1             Nickel         ppm         ASTM D5185m         >2         <1  | CONTAMINAT       | ION      | method      | limit/base | current     | history1 | history2 |
| Chromium  | Water            |          | WC Method   | >0.1       | NEG         |          |          |
| Description   | WEAR METAL       | .S       | method      | limit/base | current     | history1 | history2 |
| Nickel  | Iron             | ppm      | ASTM D5185m | >50        | 14          |          |          |
| Nickel  | Chromium         | ppm      | ASTM D5185m | >4         | 1           |          |          |
| Description   | Nickel           |          | ASTM D5185m | >2         | <1          |          |          |
| Silver  | Titanium         |          | ASTM D5185m |            |             |          |          |
| Aluminum  | Silver           |          |             | >3         | 0           |          |          |
| Lead  | Aluminum         |          | ASTM D5185m | >9         | 6           |          |          |
| Copper         ppm         ASTM D5185m         >35         <1             Tin         ppm         ASTM D5185m         >4         <1   | Lead             |          |             |            | 4           |          |          |
| Tin   | Copper           |          |             | >35        | <1          |          |          |
| Vanadium         ppm         ASTM D5185m         <1             Cadmium         ppm         ASTM D5185m         0             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         50         6             Barium         ppm         ASTM D5185m         50         56             Molybdenum         ppm         ASTM D5185m         50         56             Manganese         ppm         ASTM D5185m         50         56             Magnesium         ppm         ASTM D5185m         560         585             Calcium         ppm         ASTM D5185m         780         765             Phosphorus         ppm         ASTM D5185m         2040         2413             Sulfur         ppm         ASTM D5185m         2040         2413             CONTAMINANTS         method         limit/base         current         hist  |                  |          |             |            |             |          |          |
| ADDITIVES   |                  |          |             |            |             |          |          |
| Boron   ppm   ASTM D5185m   50   6  |                  |          |             |            |             |          |          |
| Barium  | ADDITIVES        |          | method      | limit/base | current     | history1 | history2 |
| Molybdenum         ppm         ASTM D5185m         50         56             Manganese         ppm         ASTM D5185m         0         <1             Magnesium         ppm         ASTM D5185m         560         585             Calcium         ppm         ASTM D5185m         780         765             Phosphorus         ppm         ASTM D5185m         870         978             Zinc         ppm         ASTM D5185m         2040         2413             Sulfur         ppm         ASTM D5185m         2040         2413             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         4             Sodium         ppm         ASTM D5185m         8             Potassium         ppm         ASTM D5185m         >20         9             INFRA-RED         method         limit/base         curre  | Boron            | ppm      | ASTM D5185m | 50         | 6           |          |          |
| Manganese         ppm         ASTM D5185m         0         <1             Magnesium         ppm         ASTM D5185m         560         585             Calcium         ppm         ASTM D5185m         1510         1560             Phosphorus         ppm         ASTM D5185m         780         765             Zinc         ppm         ASTM D5185m         870         978             Sulfur         ppm         ASTM D5185m         2040         2413             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         4             Sodium         ppm         ASTM D5185m         >20         9             Potassium         ppm         ASTM D5185m         >20         9             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624  | Barium           | ppm      | ASTM D5185m | 5          | 0           |          |          |
| Magnesium         ppm         ASTM D5185m         560         585             Calcium         ppm         ASTM D5185m         1510         1560             Phosphorus         ppm         ASTM D5185m         780         765             Zinc         ppm         ASTM D5185m         870         978             Sulfur         ppm         ASTM D5185m         2040         2413             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         4             Sodium         ppm         ASTM D5185m         >20         9             Potassium         ppm         ASTM D5185m         >20         9             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         11.9             Sulfation         Abs/.1mm         *ASTM D7414 <td>Molybdenum</td> <td>ppm</td> <td>ASTM D5185m</td> <td>50</td> <td>56</td> <td></td> <td></td>   | Molybdenum       | ppm      | ASTM D5185m | 50         | 56          |          |          |
| Calcium         ppm         ASTM D5185m         1510         1560             Phosphorus         ppm         ASTM D5185m         780         765             Zinc         ppm         ASTM D5185m         870         978             Sulfur         ppm         ASTM D5185m         2040         2413             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         4             Sodium         ppm         ASTM D5185m         8             Potassium         ppm         ASTM D5185m         >20         9             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         11.9             Sulfation         Abs/.1mm         *ASTM D7415         >30         25.8             FLUID DEGRADATION         *ASTM D7414         >25 <t< td=""><td>Manganese</td><td>ppm</td><td>ASTM D5185m</td><td>0</td><td>&lt;1</td><td></td><td></td></t<>  | Manganese        | ppm      | ASTM D5185m | 0          | <1          |          |          |
| Phosphorus         ppm         ASTM D5185m         780         765             Zinc         ppm         ASTM D5185m         870         978             Sulfur         ppm         ASTM D5185m         2040         2413             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         4             Sodium         ppm         ASTM D5185m         8             Potassium         ppm         ASTM D5185m         >20         9             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0             Sulfation         Abs/.mm         *ASTM D7415         >30         25.8            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.mm         *ASTM D7414         >25         21.1  | Magnesium        | ppm      | ASTM D5185m | 560        | 585         |          |          |
| Zinc   ppm   ASTM D5185m   870   978       Sulfur   ppm   ASTM D5185m   2040   2413       Sulfur   ppm   ASTM D5185m   2040   2413       Sulfucon   ppm   ASTM D5185m   >+100   4       Sodium   ppm   ASTM D5185m   8       Sulfation   ppm   ASTM D5185m   >20   9       Sulfation   Abs/cm   *ASTM D7844   0       Sulfation   Abs/.1mm   *ASTM D7415   >30   25.8       Sulfation   Abs/.1mm   *ASTM D7414   >25   21.1       Sulfation   Abs/.1mm   *ASTM D7414   >25   21.1         Sulfation   Abs/.1mm   *ASTM D7414   >25   21.1           Sulfation   Abs/.1mm   *ASTM D7414   >25   21.1   | Calcium          | ppm      | ASTM D5185m | 1510       | 1560        |          |          |
| Zinc   ppm   ASTM D5185m   870   978       Sulfur   ppm   ASTM D5185m   2040   2413       Sulfur   ppm   ASTM D5185m   2040   2413       Sulfucon   ppm   ASTM D5185m   >+100   4       Sodium   ppm   ASTM D5185m   8       Sulfation   ppm   ASTM D5185m   >20   9       Sulfation   Abs/cm   *ASTM D7844   0       Sulfation   Abs/.1mm   *ASTM D7415   >30   25.8       Sulfation   Abs/.1mm   *ASTM D7414   >25   21.1       Sulfation   Abs/.1mm   *ASTM D7414   >25   21.1         Sulfation   Abs/.1mm   *ASTM D7414   >25   21.1           Sulfation   Abs/.1mm   *ASTM D7414   >25   21.1   | Phosphorus       |          | ASTM D5185m | 780        | 765         |          |          |
| Sulfur         ppm         ASTM D5185m         2040         2413             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         4             Sodium         ppm         ASTM D5185m         8             Potassium         ppm         ASTM D5185m         >20         9             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0             Soilfation         Abs/.1mm         *ASTM D7624         >20         11.9             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         21.1  | •                |          | ASTM D5185m | 870        | 978         |          |          |
| Silicon   ppm   ASTM D5185m   >+100   4           Sodium   ppm   ASTM D5185m   8         Potassium   ppm   ASTM D5185m   >20   9         INFRA-RED   method   limit/base   current   history1   history2     Soot %   *ASTM D7844   0         Nitration   Abs/cm   *ASTM D7624   >20   11.9         Sulfation   Abs/.1mm   *ASTM D7415   >30   25.8         FLUID DEGRADATION   method   limit/base   current   history1   history2     Oxidation   Abs/.1mm   *ASTM D7414   >25   21.1   | Sulfur           |          | ASTM D5185m | 2040       | 2413        |          |          |
| Sodium         ppm         ASTM D5185m         8             Potassium         ppm         ASTM D5185m         >20         9             INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7844         0             Nitration         Abs/cm         *ASTM D7624         >20         11.9             Sulfation         Abs/.1mm         *ASTM D7415         >30         25.8             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         21.1   | CONTAMINAN       | ITS      | method      | limit/base | current     | history1 | history2 |
| Potassium         ppm         ASTM D5185m         >20         9             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0             Nitration         Abs/cm         *ASTM D7624         >20         11.9             Sulfation         Abs/.1mm         *ASTM D7415         >30         25.8             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         21.1  | Silicon          | ppm      | ASTM D5185m | >+100      | 4           |          |          |
| INFRA-RED   | Sodium           | ppm      | ASTM D5185m |            | 8           |          |          |
| Soot %         %         *ASTM D7844         0             Nitration         Abs/cm         *ASTM D7624         >20         11.9             Sulfation         Abs/.1mm         *ASTM D7415         >30         25.8             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         21.1  | Potassium        | ppm      | ASTM D5185m | >20        | 9           |          |          |
| Nitration         Abs/cm         *ASTM D7624         >20         11.9             Sulfation         Abs/.1mm         *ASTM D7415         >30         25.8             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         21.1   | INFRA-RED        |          | method      | limit/base | current     | history1 | history2 |
| Sulfation         Abs/.1mm         *ASTM D7415         >30         25.8             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         21.1   | Soot %           | %        | *ASTM D7844 |            | 0           |          |          |
| FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.1   | Nitration        | Abs/cm   | *ASTM D7624 | >20        | 11.9        |          |          |
| Oxidation   | Sulfation        | Abs/.1mm | *ASTM D7415 | >30        | 25.8        |          |          |
|   | FLUID DEGRAI     | OATION   | method      | limit/base | current     | history1 | history2 |
|   | Oxidation        | Abs/.1mm | *ASTM D7414 | >25        | 21.1        |          |          |
|   | Base Number (BN) | mg KOH/g | ASTM D2896  | 10.2       | 3.3         |          |          |



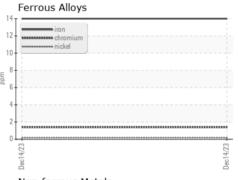
# **OIL ANALYSIS REPORT**



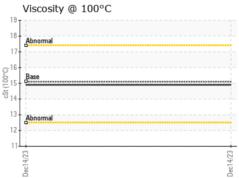
| VISUAL                  |        | method  | limit/base | current | history1 | history2 |
|-------------------------|--------|---------|------------|---------|----------|----------|
| White Metal             | scalar | *Visual | NONE       | NONE    |          |          |
| Yellow Metal            | scalar | *Visual | NONE       | NONE    |          |          |
| Precipitate             | scalar | *Visual | NONE       | NONE    |          |          |
| Silt                    | scalar | *Visual | NONE       | NONE    |          |          |
| Debris                  | scalar | *Visual | NONE       | NONE    |          |          |
| Sand/Dirt               | scalar | *Visual | NONE       | NONE    |          |          |
| Appearance              | scalar | *Visual | NORML      | NORML   |          |          |
| Odor                    | scalar | *Visual | NORML      | NORML   |          |          |
| <b>Emulsified Water</b> | scalar | *Visual | >0.1       | NEG     |          |          |
| Free Water              | scalar | *Visual |            | NEG     |          |          |
| ELLIID PROPE            | DTIES  | method  | limit/hase | current | hietory1 | history2 |

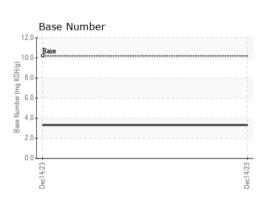
| FLUID PROP   | ERITES | method    |      |      | riistory i | riistoryz |
|--------------|--------|-----------|------|------|------------|-----------|
| Visc @ 100°C | cSt    | ASTM D445 | 15.1 | 14.9 |            |           |

### **GRAPHS**



| 10-       | Non-ferrous Metals |         |
|-----------|--------------------|---------|
| 8 -       | copper             |         |
| 6.<br>udd |                    |         |
| 립<br>4-   |                    |         |
| 2.        |                    |         |
| 0 -       |                    | -       |
|           | Dec14/A23          | 7/LIDBU |
|           | Viscosity @ 100°C  |         |







Certificate L2367

Laboratory Sample No. Lab Number **Unique Number** Test Package : FLEET

: GFL0102744 : 06042838 : 10803446

To discuss this sample report, contact Customer Service at 1-800-237-1369.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Recieved Diagnosed

: 22 Dec 2023 : 26 Dec 2023 Diagnostician : Wes Davis

GFL Environmental - 963 - Peoria HC Disposal

1113 N. Swords Ave. West Peoria, IL US 61604

Contact: Corey Dozard cdozard@gflenv.com T:

\* - 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)

F: