

## **OIL ANALYSIS REPORT**

Sample Rating Trend



### Machine Id 923040-260203

## Diesel Engine

Fluid PETRO CANADA DURON SHP 15W40 (--- GAL)

#### DIAGNOSIS

#### Recommendation

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.

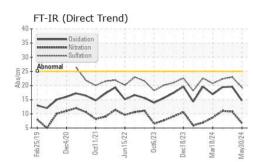
#### Fluid Condition

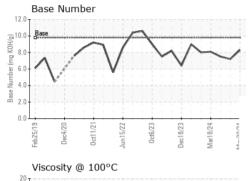
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

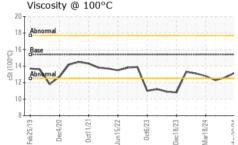
| SAMPLE INFOR  | MATION   | method   | limit/base  | current   | history1  | history2   |
|---|--|--|---|---|---|--|
| Sample Number   |  | Client Info  |   | GFL0104980  | GFL0104834  | GFL0104815   |
| Sample Date   |  | Client Info  |   | 30 May 2024   | 10 May 2024   | 09 Apr 2024  |
| Machine Age   | mls  | Client Info  |   | 0   | 0   | 21203  |
| Oil Age   | mls  | Client Info  |   | 0   | 0   | 0  |
| Oil Changed   |  | Client Info  |   | N/A   | N/A   | Not Changd   |
| Sample Status   |  |  |   | NORMAL  | NORMAL  | MARGINAL   |
| CONTAMINAT  | ION  | method   | limit/base  | current   | history1  | history2   |
| Fuel  |  | WC Method  | >5  | <1.0  | <1.0  | <b>2</b> .8  |
| Water   |  | WC Method  | >0.2  | NEG   | NEG   | NEG  |
| Glycol  |  | WC Method  |   | NEG   | NEG   | NEG  |
| WEAR METAL  | S  | method   | limit/base  | current   | history1  | history2   |
| Iron  | ppm  | ASTM D5185m  | >100  | 14  | 48  | 42   |
| Chromium  | ppm  | ASTM D5185m  | >20   | <1  | 2   | <1   |
| Nickel  | ppm  | ASTM D5185m  | >4  | 0   | 0   | 0  |
| Titanium  | ppm  | ASTM D5185m  |   | <1  | <1  | 0  |
| Silver  | ppm  | ASTM D5185m  | >3  | 0   | 0   | 0  |
| Aluminum  | ppm  | ASTM D5185m  | >20   | 4   | 6   | 2  |
| Lead  | ppm  | ASTM D5185m  | >40   | <1  | 2   | 0  |
| Copper  | ppm  | ASTM D5185m  | >330  | 1   | 2   | 1  |
| Tin   | ppm  | ASTM D5185m  | >15   | <1  | <1  | 0  |
| Vanadium  | ppm  | ASTM D5185m  |   | 0   | 0   | 0  |
| Cadmium   | ppm  | ASTM D5185m  |   | 0   | 0   | 0  |
|   | • •  |  |   |   |   |  |
| ADDITIVES   |  | method   | limit/base  | current   | history1  | history2   |
| ADDITIVES<br>Boron  | ppm  | method<br>ASTM D5185m  | limit/base  | current<br>0  |   | history2<br>0  |
|   | ppm<br>ppm   | ASTM D5185m  |   |   | history1  |  |
| Boron   |  | ASTM D5185m  | 0   | 0   | history1<br>1   | 0  |
| Boron<br>Barium   | ppm  | ASTM D5185m<br>ASTM D5185m   | 0<br>0<br>60  | 0<br>1  | history1<br>1<br>0  | 0  |
| Boron<br>Barium<br>Molybdenum   | ppm<br>ppm   | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | 0<br>0<br>60  | 0<br>1<br>60  | history1<br>1<br>0<br>56  | 0<br>0<br>60   |
| Boron<br>Barium<br>Molybdenum<br>Manganese  | ppm<br>ppm<br>ppm  | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | 0<br>0<br>60<br>0   | 0<br>1<br>60<br>0   | history1<br>1<br>0<br>56<br>2   | 0<br>0<br>60<br>0  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium   | ppm<br>ppm<br>ppm<br>ppm   | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | 0<br>0<br>60<br>0<br>1010   | 0<br>1<br>60<br>0<br>897  | history1<br>1<br>0<br>56<br>2<br>895  | 0<br>0<br>60<br>0<br>953   |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium  | ppm<br>ppm<br>ppm<br>ppm<br>ppm                                    | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | 0<br>0<br>60<br>0<br>1010<br>1070   | 0<br>1<br>60<br>0<br>897<br>1111  | history1 1 0 56 2 895 987   | 0<br>0<br>60<br>0<br>953<br>1128   |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm                             | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | 0<br>0<br>60<br>0<br>1010<br>1070<br>1150   | 0<br>1<br>60<br>0<br>897<br>1111<br>1014  | history1 1 0 56 2 895 987 988   | 0<br>0<br>60<br>953<br>1128<br>1057  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm                      | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | 0<br>0<br>60<br>0<br>1010<br>1070<br>1150<br>1270   | 0<br>1<br>60<br>0<br>897<br>1111<br>1014<br>1258  | history1 1 0 56 2 895 987 988 1193  | 0<br>0<br>60<br>0<br>953<br>1128<br>1057<br>1303   |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm                      | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | 0<br>0<br>60<br>1010<br>1070<br>1150<br>1270<br>2060  | 0<br>1<br>60<br>0<br>897<br>1111<br>1014<br>1258<br>3318  | history1 1 0 56 2 895 987 988 1193 3177   | 0<br>0<br>60<br>0<br>953<br>1128<br>1057<br>1303<br>3451   |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINAN  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm               | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | 0<br>0<br>60<br>1010<br>1070<br>1150<br>1270<br>2060  | 0<br>1<br>60<br>0<br>897<br>1111<br>1014<br>1258<br>3318<br>current   | history1  | 0<br>0<br>60<br>0<br>953<br>1128<br>1057<br>1303<br>3451<br>history2   |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINAN<br>Silicon   | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>TS         | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br><b>method</b>  | 0<br>0<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>kimit/base<br>>25  | 0<br>1<br>60<br>0<br>897<br>1111<br>1014<br>1258<br>3318<br>current<br>4  | history1         1         0         56         2         895         987         988         1193         3177         history1         9  | 0<br>0<br>60<br>953<br>1128<br>1057<br>1303<br>3451<br>history2<br>7   |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINAN<br>Silicon<br>Sodium   | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>TS         | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | 0<br>0<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>kimit/base<br>>25  | 0<br>1<br>60<br>0<br>897<br>1111<br>1014<br>1258<br>3318<br>current<br>4<br>0                                       | history1           1           0           56           2           895           987           988           1193           3177           history1           9           8  | 0<br>0<br>60<br>953<br>1128<br>1057<br>1303<br>3451<br>history2<br>7<br>8  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINAN<br>Silicon<br>Sodium<br>Potassium  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>TS         | ASTM D5185m<br>ASTM D5185m  | 0<br>0<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br><b>limit/base</b><br>>25<br>>20  | 0<br>1<br>60<br>0<br>897<br>1111<br>1014<br>1258<br>3318<br>current<br>4<br>0<br>2                                  | history1         1         0         56         2         895         987         988         1193         3177         history1         9         8         2  | 0<br>0<br>60<br>0<br>953<br>1128<br>1057<br>1303<br>3451<br>history2<br>7<br>8<br>8<br><1  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINAN<br>Silicon<br>Sodium<br>Potassium<br>INFRA-RED                                     | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>TS         | ASTM D5185m<br>ASTM D5185m                               | 0<br>0<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>2060<br>225<br>>25<br>>20<br>Limit/base<br>>20   | 0<br>1<br>60<br>0<br>897<br>1111<br>1014<br>1258<br>3318<br>current<br>4<br>0<br>2<br>current                       | history1         1         0         56         2         895         987         988         1193         3177         history1         9         8         2         history1                                       | 0<br>0<br>60<br>953<br>1128<br>1057<br>1303<br>3451<br>history2<br>7<br>8<br><1<br>*   |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINAN<br>Silicon<br>Sodium<br>Potassium<br>INFRA-RED<br>Soot %                           | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>TS         | ASTM D5185m<br>ASTM D5185m                | 0<br>0<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>2060<br>225<br>>25<br>>20<br>Limit/base<br>>20   | 0<br>1<br>60<br>0<br>897<br>1111<br>1014<br>1258<br>3318<br>current<br>4<br>0<br>2<br>current<br>0.5                | history1         1         0         56         2         895         987         988         1193         3177         history1         9         8         2         history1         1.2                           | 0<br>0<br>60<br>953<br>1128<br>1057<br>1303<br>3451<br><b>history2</b><br>7<br>8<br><1<br><b>history2</b><br>1.1                             |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINAN<br>Silicon<br>Sodium<br>Potassium<br>INFRA-RED<br>Soot %<br>Nitration              | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185m<br>ASTM D5185m | 0<br>0<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>2060<br>225<br>220<br>220<br>220<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20 | 0<br>1<br>60<br>0<br>897<br>1111<br>1014<br>1258<br>3318<br>current<br>4<br>0<br>2<br>current<br>0.5<br>6.7         | history1         1         0         56         2         895         987         988         1193         3177         history1         9         8         2         history1         1.2         10.8              | 0<br>0<br>60<br>0<br>953<br>1128<br>1057<br>1303<br>3451<br>history2<br>7<br>8<br><1<br>*<br>history2<br>1.1<br>1.1                          |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINAN<br>Silicon<br>Sodium<br>Potassium<br>INFRA-RED<br>Soot %<br>Nitration<br>Sulfation | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185m<br>ASTM D5185m | 0<br>0<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>2060<br>225<br>20<br>225<br>20<br>20<br>320<br>33<br>20<br>20<br>20                    | 0<br>1<br>60<br>0<br>897<br>1111<br>1014<br>1258<br>3318<br>current<br>4<br>0<br>2<br>current<br>0.5<br>6.7<br>19.3 | history1         1         0         56         2         895         987         988         1193         3177         history1         9         8         2         history1         1.2         10.8         23.0 | 0<br>0<br>60<br>0<br>953<br>1128<br>1057<br>1303<br>3451<br><b>history2</b><br>7<br>8<br><1<br><b>history2</b><br>1.1<br>1.1<br>11.0<br>22.3 |



# **OIL ANALYSIS REPORT**

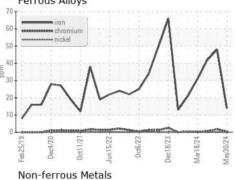


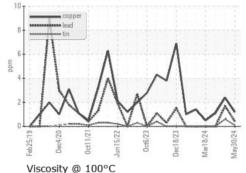


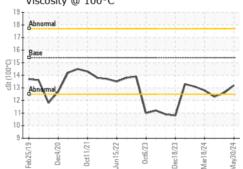


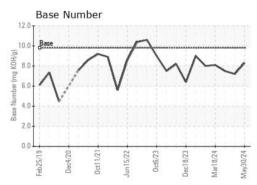
| VISUAL           |        | method    |            |         |          | history2 |
|------------------|--------|-----------|------------|---------|----------|----------|
| White Metal      | scalar | *Visual   | NONE       | NONE    | NONE     | NONE     |
| Yellow Metal     | scalar | *Visual   | 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 PROPE      | RTIES  | method    | limit/base | current | history1 | history2 |
| Visc @ 100°C     | cSt    | ASTM D445 | 15.4       | 13.2    | 12.6     | 12.3     |
| GRAPHS           |        |           |            |         |          |          |

Ferrous Alloys









Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 820 - Joplin Hauling Sample No. : GFL0104980 Received : 05 Jun 2024 3700 West 7th Street Lab Number : 06201052 Tested : 06 Jun 2024 Joplin, MO US 64801 Unique Number : 11063175 Diagnosed : 06 Jun 2024 - Wes Davis Test Package : FLEET Contact: James Jarrett Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. jjarrett@gflenv.com T: (417)310-2802 \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. F:

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Report Id: GFL820 [WUSCAR] 06201052 (Generated: 06/06/2024 19:31:49) Rev: 1

Submitted By: VINCE ASTI Page 2 of 2