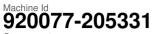


# **OIL ANALYSIS REPORT**

#### Sample Rating Trend





#### Component 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.

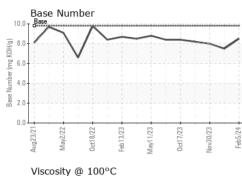
| 2021 MayA022 0x2022 Feb2023 May6023 0x2623 Nev2023 Feb2024 | od limit/base                    | current             | h       |
|--|----------------------------------|---------------------|---------|
|  | 121 May2022 Oct2022 Feb2023 May2 | 023 Oct2023 Nov2023 | Feb2024 |
|  |                                  |                     |         |
|  |                                  |                     |         |
|  |                                  |                     |         |
|  |                                  |                     |         |
|  |                                  |                     |         |
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|  |                                  |                     |         |
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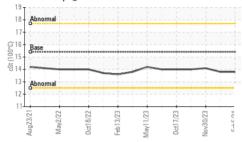


| SAMPLE INFORI   | MATION  | method  | limit/base   | current  | history1  | history2   |
|---|---|---|--|--|---|--|
| Sample Number   |   | Client Info   |  | GFL0109222   | GFL0098351  | GFL0098335   |
| Sample Date   |   | Client Info   |  | 05 Feb 2024  | 24 Jan 2024   | 30 Nov 2023  |
| Machine Age   | hrs   | Client Info   |  | 11123  | 10904   | 1067   |
| Oil Age   | hrs   | Client Info   |  | 700  | 600   | 150  |
| Oil Changed   |   | Client Info   |  | Changed  | Changed   | Not Changd   |
| Sample Status   |   |   |  | NORMAL   | NORMAL  | NORMAL   |
| CONTAMINAT  | ION   | method  | limit/base   | current  | history1  | history2   |
| Fuel  |   | WC Method   | >5   | <1.0   | <1.0  | <1.0   |
| 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   | 4  | 14  | 9  |
| Chromium  | ppm   | ASTM D5185m   | >20  | <1   | <1  | <1   |
| Nickel  | ppm   | ASTM D5185m   | >4   | 0  | 0   | 0  |
| Titanium  | ppm   | ASTM D5185m   |  | 0  | <1  | 0  |
| Silver  | ppm   | ASTM D5185m   | >3   | 0  | 0   | 0  |
| Aluminum  | ppm   | ASTM D5185m   | >20  | <1   | 2   | <1   |
| Lead  | ppm   | ASTM D5185m   | >40  | 0  | 0   | 0  |
| Copper  | ppm   | ASTM D5185m   | >330   | 0  | <1  | <1   |
| Tin   | ppm   | ASTM D5185m   | >15  | 0  | <1  | 0  |
| Vanadium  | ppm   | ASTM D5185m   |  | <1   | <1  | 0  |
| Cadmium   | ppm   | ASTM D5185m   |  | 0  | <1  | 0  |
|   |   |   |  | v  |   | 0  |
| ADDITIVES   |   | method  | limit/base   | current  | history1  | history2   |
| ADDITIVES<br>Boron  | ppm   | method  | limit/base   |  |   | -  |
|   |   | method  |  | current  | history1  | history2   |
| Boron   | ppm   | method<br>ASTM D5185m   | 0  | current<br>0   | history1<br>0   | history2<br>0  |
| Boron<br>Barium   | ppm<br>ppm  | method<br>ASTM D5185m<br>ASTM D5185m  | 0  | current<br>0<br>0  | history1<br>0<br>0  | history2<br>0<br>0   |
| Boron<br>Barium<br>Molybdenum   | ppm<br>ppm<br>ppm   | method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | 0<br>0<br>60   | current<br>0<br>0<br>57  | history1<br>0<br>0<br>54  | history2<br>0<br>0<br>58   |
| Boron<br>Barium<br>Molybdenum<br>Manganese  | ppm<br>ppm<br>ppm   | method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | 0<br>0<br>60<br>0  | ourrent<br>0<br>0<br>57<br>0   | history1<br>0<br>0<br>54<br><1  | history2<br>0<br>0<br>58<br>0  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium   | ppm<br>ppm<br>ppm<br>ppm<br>ppm   | method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | 0<br>0<br>60<br>0<br>1010  | current<br>0<br>0<br>57<br>0<br>993  | history1<br>0<br>0<br>54<br><1<br>989   | history2<br>0<br>0<br>58<br>0<br>952   |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm  | method<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  | current           0           57           0           993           1040  | history1<br>0<br>0<br>54<br><1<br>989<br>996  | history2<br>0<br>0<br>58<br>0<br>952<br>1009   |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm   | method<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  | current           0           57           0           993           1040           1106   | history1<br>0<br>54<br><1<br>989<br>996<br>996  | history2<br>0<br>0<br>58<br>0<br>952<br>1009<br>956  |
| 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<br>ppm  | method<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>0<br>1010<br>1070<br>1150<br>1270  | Current<br>0<br>0<br>57<br>0<br>993<br>1040<br>1106<br>1287  | history1<br>0<br>54<br><1<br>989<br>996<br>996<br>1208  | history2<br>0<br>0<br>58<br>0<br>952<br>1009<br>956<br>1223  |
| 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<br>ppm  | method<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>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060  | Current<br>0<br>57<br>0<br>993<br>1040<br>1106<br>1287<br>3207   | history1         0         0         54         <1         989         996         996         1208         2805  | history2<br>0<br>0<br>58<br>0<br>952<br>1009<br>956<br>1223<br>2957  |
| 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<br>ppm                                   | method<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>60<br>1010<br>1070<br>1150<br>1270<br>2060   | Current<br>0<br>0<br>57<br>0<br>993<br>1040<br>1106<br>1287<br>3207<br>Current   | history1         0         0         54         <1         989         996         996         1208         2805         history1   | history2<br>0<br>0<br>58<br>0<br>952<br>1009<br>956<br>1223<br>2957<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>ppm<br>ppm                            | method<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<br><b>method</b><br>ASTM D5185m   | 0<br>0<br>60<br>1010<br>1070<br>1150<br>1270<br>2060   | current           0           0           57           0           993           1040           1106           1287           3207           current           4   | history1         0         0         54         <1         989         996         996         996         2805         history1         4  | history2           0           0           58           0           952           1009           956           1223           2957           history2           3  |
| 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>ppm<br>TS                             | method<br>ASTM D5185m<br>ASTM D5185m   | 0<br>0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>Limit/base<br>>25   | current           0           0           57           0           993           1040           1106           1287           3207           current           4           2   | history1         0         0         54         <1         989         996         996         996         1208         2805         history1         4         5   | history2           0           0           58           0           952           1009           956           1223           2957           history2           3           3  |
| 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>ppm<br>TS                             | method<br>ASTM D5185m<br>ASTM D5185m   | 0<br>0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br><b>limit/base</b><br>>25<br>>20   | current         0         0         57         0         993         1040         1106         1287         3207         current         4         2         <1  | history1         0         0         54         <1         989         996         996         1208         2805         history1         4         5         2   | history2           0           0           58           0           952           1009           956           1223           2957           history2           3           3           0  |
| 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>ppm<br>ppm                            | method<br>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  | current         0         0         57         0         993         1040         1106         1287         3207         current         4         2         <1         current                                      | history1         0         0         54         <1         989         996         996         1208         2805         history1         4         5         2         history1  | history2         0         0         58         0         952         1009         956         1223         2957         history2         3         0         history2   |
| 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>ppm<br>ppm                            | method           ASTM D5185m                      | 0<br>0<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>limit/base<br>>25<br>>20<br>limit/base<br>>3  | current         0         0         57         0         993         1040         1106         1287         3207         current         4         2         <1         current         0.4                          | history1         0         0         54         <1         989         996         996         1208         2805         history1         4         5         2         history1         1.3                                      | history2           0           0           58           0           952           1009           956           1223           2957           history2           3           0           history2           0           history2           0           history2           0.8               |
| 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<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><b>TS</b><br>ppm<br>ppm<br>ppm | method           ASTM D5185m           ASTM D7844           *ASTM D7624           *ASTM D7415 | 0<br>0<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>imit/base<br>>25<br>>20<br>imit/base<br>>3<br>>20   | current         0         0         57         0         993         1040         1106         1287         3207         current         4         2         <1         current         0.4         5.5              | history1         0         0         54         <1         989         996         996         2805         history1         4         5         2         history1         1.3         9.3                                       | history2           0           0           58           0           952           1009           956           1223           2957           history2           3           0           history2           0           bistory2           0           history2           0.8           8.0 |
| 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><b>TS</b><br>ppm<br>ppm<br>ppm | method           ASTM D5185m           ASTM D7844           *ASTM D7624           *ASTM D7415 | 0<br>0<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>2060<br>225<br>25<br>20<br>220<br>3<br>20<br>3<br>20<br>3<br>20<br>3<br>3<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20 | current         0         0         57         0         993         1040         1106         1287         3207         current         4         2         <1         current         0.4         5.5         17.7 | history1         0         0         54         <1         989         996         996         996         1208         2805         history1         4         5         2         history1         1.3         9.3         20.7 | history2         0         0         58         0         952         1009         956         1223         2957         history2         3         0         history2         0         history2         0.8         8.0         19.5   |

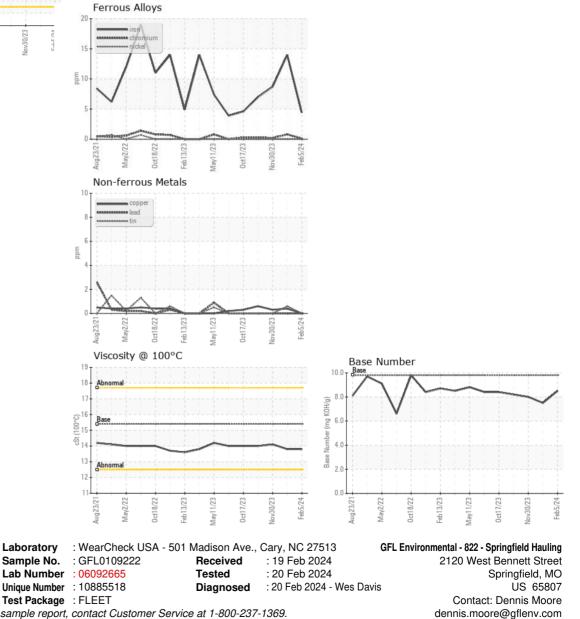


# **OIL ANALYSIS REPORT**





| 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 PROPE      | RTIES  | method    | limit/base | current | history1 | history2 |
| Visc @ 100°C     | cSt    | ASTM D445 | 15.4       | 13.8    | 13.8     | 14.1     |
| GRAPHS           |        |           |            |         |          |          |





 Certificate 12367
 Test Package
 : FLEET

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

 \* - 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:

T: (417)403-3641