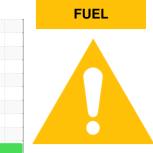


## **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id 501142 Component

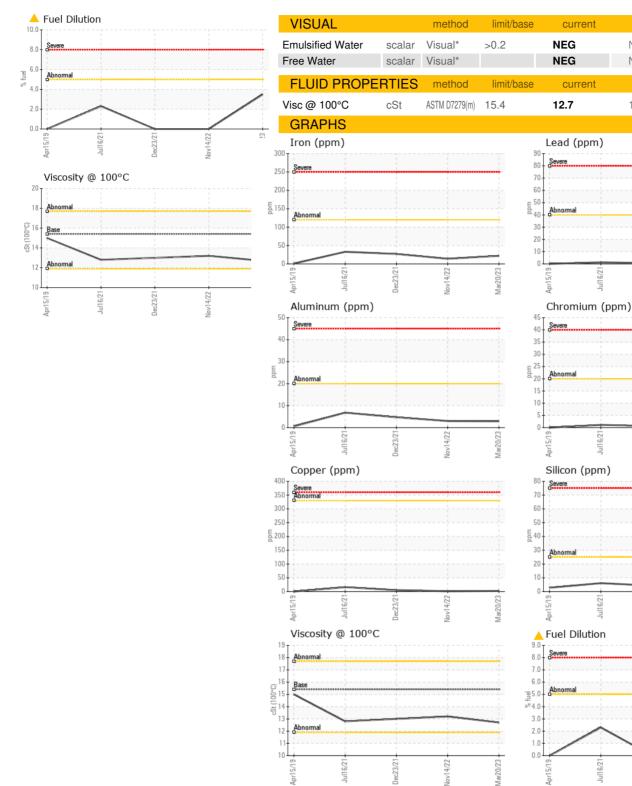
**Diesel Engine** Fluid

## PETRO CANADA DURON SHP 15W40 (--- LTR)

| DIAGNOSIS  | SAMPLE INFORM  | IATION   | method  | limit/base   | current  | history1  | history2  |
|--|--|--|---|--|--|---|---|
| Recommendation   | Sample Number  |  | Client Info   |  | GFL0074238   | GFL0061082  | GFL0041348  |
| No corrective action is recommended at this time.                              | Sample Date  |  | Client Info   |  | 20 Mar 2023  | 14 Nov 2022   | 23 Dec 2021   |
| Resample at the next service interval to monitor.                              | •  | hrs  | Client Info   |  | 0  | 4099  | 3135  |
| Wear   | -  | hrs  | Client Info   |  | 0  | 399   | 0   |
| All component wear rates are normal.   | Oil Changed  |  | Client Info   |  | N/A  | Changed   | Changed   |
| Contamination  | Sample Status  |  |   |  | MARGINAL   | NORMAL  | NORMAL  |
| Light fuel dilution occurring. No other contaminants were detected in the oil. | CONTAMINATIO   | ON   | method  | limit/base   |  | history1  | history2  |
| Fluid Condition  | Glycol   |  | WC Method   |  | NEG  | NEG   | NEG   |
| he condition of the oil is acceptable for the time in ervice.                  | WEAR METALS  | 5  | method  | limit/base   | current  | history1  | history2  |
|  | Iron   | ppm  | ASTM D5185(m)   | >120   | 22   | 14  | 27  |
|  | Chromium   | ppm  | ASTM D5185(m)   | >20  | <1   | <1  | <1  |
|  | Nickel   | ppm  | ASTM D5185(m)   | >5   | <1   | 1   | 3   |
|  |  | ppm  | ASTM D5185(m)   |  | <1   | 0   | 0   |
|  |  | ppm  | ASTM D5185(m)   |  | 0  | 0   | 0   |
|  |  | ppm  | ASTM D5185(m)   |  | 3  | 3   | 5   |
|  |  | ppm  | . ,   | >40  | <1   | <1  | <1  |
|  | -  | ppm  | ASTM D5185(m)   |  | 2  | 1   | 5   |
|  |  | ppm  | ASTM D5185(m)   |  | -<br><1  | <1  | <1  |
|  |  | ppm  | ASTM D5185(m)   |  | <1   | 0   | <1  |
|  |  | ppm  | ASTM D5185(m)   |  | 0  | 0   | 0   |
|  |  | ppm  | ASTM D5185(m)   |  | 0  | 0   | 0   |
|  |  | ppm  | ASTM D5185(m)   |  | 0  | 0   | 0   |
|  |  | ppin   | method  | linsit/base  |  |   |   |
|  | ADDITIVES  |  |   | IIIIII/Dase  |  |   | history2  |
|  | ADDITIVES<br>Boron   | ppm  |   | limit/base   |  | history1  | history2  |
|  | Boron  | ppm  | ASTM D5185(m)   | 0  | 4  | 3   | 6   |
|  | Boron<br>Barium  | ppm  | ASTM D5185(m)<br>ASTM D5185(m)  | 0  | 4<br>0   | 3<br>0  | 6<br>0  |
|  | Boron<br>Barium<br>Molybdenum  | ppm<br>ppm   | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)   | 0<br>0<br>60   | 4<br>0<br>58   | 3<br>0<br>57  | 6<br>0<br>60  |
|  | Boron<br>Barium<br>Molybdenum<br>Manganese   | ppm<br>ppm<br>ppm  | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)  | 0<br>0<br>60<br>0  | 4<br>0<br>58<br><1   | 3<br>0<br>57<br><1  | 6<br>0<br>60<br><1  |
|  | Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium  | ppm<br>ppm<br>ppm<br>ppm   | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)   | 0<br>0<br>60<br>0<br>1010  | 4<br>0<br>58<br><1<br>924  | 3<br>0<br>57<br><1<br>921   | 6<br>0<br>60<br><1<br>929   |
|  | Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium   | ppm<br>ppm<br>ppm<br>ppm<br>ppm                                    | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)  | 0<br>0<br>60<br>0<br>1010<br>1070  | 4<br>0<br>58<br><1<br>924<br>1028  | 3<br>0<br>57<br><1<br>921<br>1041   | 6<br>0<br>60<br><1<br>929<br>1085   |
|  | 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 D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)   | 0<br>0<br>60<br>0<br>1010<br>1070<br>1150  | 4<br>0<br>58<br><1<br>924<br>1028<br>1040  | 3<br>0<br>57<br><1<br>921<br>1041<br>1024   | 6<br>0<br>60<br><1<br>929<br>1085<br>971  |
|  | 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                             | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)   | 0<br>0<br>60<br>0<br>1010<br>1070<br>1150<br>1270  | 4<br>0<br>58<br><1<br>924<br>1028<br>1040<br>1131  | 3<br>0<br>57<br><1<br>921<br>1041<br>1024<br>1140   | 6<br>0<br>60<br><1<br>929<br>1085<br>971<br>1121  |
|  | 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 D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)  | 0<br>0<br>60<br>0<br>1010<br>1070<br>1150  | 4<br>0<br>58<br><1<br>924<br>1028<br>1040<br>1131<br>2563  | 3<br>0<br>57<br><1<br>921<br>1041<br>1024<br>1140<br>2507   | 6<br>0<br>60<br><1<br>929<br>1085<br>971<br>1121<br>2529  |
|  | Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm               | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)   | 0<br>0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060  | 4<br>0<br>58<br><1<br>924<br>1028<br>1040<br>1131<br>2563<br><1  | 3<br>0<br>57<br><1<br>921<br>1041<br>1024<br>1140<br>2507<br><1   | 6<br>0<br>60<br><1<br>929<br>1085<br>971<br>1121<br>2529<br>0   |
|  | Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANT  | ppm                            | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)  | 0<br>0<br>60<br>1010<br>1070<br>1150<br>1270<br>2060   | 4<br>0<br>58<br><1<br>924<br>1028<br>1040<br>1131<br>2563<br><1<br>current   | 3<br>0<br>57<br><1<br>921<br>1041<br>1024<br>1140<br>2507<br><1<br>history1   | 6<br>0<br>60<br><1<br>929<br>1085<br>971<br>1121<br>2529<br>0<br>history2   |
|  | Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANT<br>Silicon  | ppm                            | ASTM D5185(m)<br>ASTM D5185(m)   | 0<br>0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060  | 4<br>0<br>58<br><1<br>924<br>1028<br>1040<br>1131<br>2563<br><1<br>current<br>3  | 3<br>0<br>57<br><1<br>921<br>1041<br>1024<br>1140<br>2507<br><1<br>history1<br>3  | 6<br>0<br>60<br><1<br>929<br>1085<br>971<br>1121<br>2529<br>0<br>history2<br>4  |
|  | Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANT<br>Silicon   | ppm                            | ASTM D5185(m)<br>ASTM D5185(m)   | 0<br>0<br>60<br>1010<br>1070<br>1150<br>1270<br>2060<br>limit/base   | 4<br>0<br>58<br><1<br>924<br>1028<br>1040<br>1131<br>2563<br><1<br>2563<br><1<br>2563<br><1<br>2563<br><1<br>2563<br><1<br>2563<br><1<br>2563<br><1<br>2563<br><1<br>2563<br><1<br>2563<br><1<br>256<br>256<br>256<br>256<br>256<br>256<br>256<br>257<br>257<br>257<br>257<br>257<br>257<br>257<br>257<br>257<br>257 | 3<br>0<br>57<br><1<br>921<br>1041<br>1024<br>1140<br>2507<br><1<br>history1<br>3<br>3<br>3  | 6<br>0<br>60<br><1<br>929<br>1085<br>971<br>1121<br>2529<br>0<br>history2<br>4<br>3   |
|  | Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANT<br>Silicon<br>Silicon<br>Sodium<br>Potassium   | ppm                            | ASTM D5185(m)<br>ASTM D5185(m)  | 0<br>0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>Imit/base<br>>25<br>>20   | 4<br>0<br>58<br><1<br>924<br>1028<br>1040<br>1131<br>2563<br><1<br><u>current</u><br>3<br>3<br>0   | 3<br>0<br>57<br><1<br>921<br>1041<br>1024<br>1140<br>2507<br><1<br><b>history1</b><br>3<br>3<br><1  | 6<br>0<br>60<br><1<br>929<br>1085<br>971<br>1121<br>2529<br>0<br>history2<br>4<br>3<br>2  |
|  | Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANT<br>Silicon<br>Sodium<br>Potassium<br>Fuel   | ppm                            | ASTM D5185(m)<br>ASTM D5185(m)  | 0<br>0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>imit/base<br>>25<br>>20<br>>5   | 4<br>0<br>58<br><1<br>924<br>1028<br>1040<br>1131<br>2563<br><1<br>2563<br><1<br><i>current</i><br>3<br>3<br>0<br>0<br>▲ 3.5   | 3<br>0<br>57<br><1<br>921<br>1041<br>1024<br>1140<br>2507<br><1<br>history1<br>3<br>3<br>3<br><1<br><1.0  | 6<br>0<br>60<br><1<br>929<br>1085<br>971<br>1121<br>2529<br>0<br>history2<br>4<br>3<br>2<br><1.0                                    |
|  | Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANT<br>Silicon<br>Sodium<br>Potassium<br>Fuel<br>INFRA-RED  | ppm                            | ASTM D5185(m)<br>ASTM D5185(m)   | 0<br>0<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>2060<br>>25<br>>20<br>>5<br>Limit/base  | 4<br>0<br>58<br><1<br>924<br>1028<br>1040<br>1131<br>2563<br><1<br>current<br>3<br>3<br>0<br>▲ 3.5<br>current  | 3<br>0<br>57<br><1<br>921<br>1041<br>1024<br>1140<br>2507<br><1<br><b>history1</b><br>3<br>3<br><1<br><1.0<br><b>history1</b>                       | 6<br>0<br>60<br><1<br>929<br>1085<br>971<br>1121<br>2529<br>0<br>history2<br>4<br>3<br>2<br><1.0<br>history2                        |
|  | Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANT<br>Silicon<br>Sodium<br>Potassium<br>Fuel<br>INFRA-RED<br>Soot %  | ppm                            | ASTM D5185(m)<br>ASTM D5185(m) | 0<br>0<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>2060<br>>25<br>>20<br>>20<br>>5<br>S  | 4<br>0<br>58<br><1<br>924<br>1028<br>1040<br>1131<br>2563<br><1<br><i>current</i><br>3<br>3<br>0<br>▲ 3.5<br><i>current</i><br>0.4   | 3<br>0<br>57<br><1<br>921<br>1041<br>1024<br>1140<br>2507<br><1<br><b>history1</b><br>3<br>3<br>3<br><1<br><1.0<br><b>history1</b><br>0.3           | 6<br>0<br>60<br><1<br>929<br>1085<br>971<br>1121<br>2529<br>0<br>history2<br>4<br>3<br>2<br><1.0<br>history2<br>0.7                 |
|  | Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANT<br>Silicon<br>Sodium<br>Potassium<br>Fuel<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 D5185(m)<br>ASTM D7593*  | 0<br>0<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>2060<br>225<br>20<br>>25<br>20<br>>5<br>20<br>20<br>>5<br>20  | 4<br>0<br>58<br><1<br>924<br>1028<br>1040<br>1131<br>2563<br><1<br><i>current</i><br>3<br>3<br>0<br>0<br>▲ 3.5<br><i>current</i><br>0.4<br>11.9  | 3<br>0<br>57<br><1<br>921<br>1041<br>1024<br>1140<br>2507<br><1<br><b>history1</b><br>3<br>3<br>3<br><1<br><1.0<br><b>history1</b><br>0.3<br>9.6    | 6<br>0<br>60<br><1<br>929<br>1085<br>971<br>1121<br>2529<br>0<br>history2<br>4<br>3<br>2<br><1.0<br>history2<br>0.7<br>11.5         |
|  | Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANT<br>Silicon<br>Sodium<br>Potassium<br>Fuel<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 D5185(m)<br>ASTM D5185(m) | 0<br>0<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>2060<br>225<br>20<br>>25<br>20<br>>5<br>20<br>20<br>>5<br>20  | 4<br>0<br>58<br><1<br>924<br>1028<br>1040<br>1131<br>2563<br><1<br><i>current</i><br>3<br>3<br>0<br>▲ 3.5<br><i>current</i><br>0.4   | 3<br>0<br>57<br><1<br>921<br>1041<br>1024<br>1140<br>2507<br><1<br><b>history1</b><br>3<br>3<br>3<br><1<br><1.0<br><b>history1</b><br>0.3           | 6<br>0<br>60<br><1<br>929<br>1085<br>971<br>1121<br>2529<br>0<br>history2<br>4<br>3<br>2<br><1.0<br>history2<br>0.7                 |
|  | Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANT<br>Silicon<br>Sodium<br>Potassium<br>Fuel<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 D5185(m)<br>ASTM D71844<br>ASTM D7593*                                       | 0<br>0<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>2060<br>225<br>20<br>>25<br>20<br>>5<br>20<br>20<br>>5<br>20  | 4<br>0<br>58<br><1<br>924<br>1028<br>1040<br>1131<br>2563<br><1<br><i>current</i><br>3<br>3<br>0<br>▲ 3.5<br><i>current</i><br>0.4<br>11.9<br>21.9   | 3<br>0<br>57<br><1<br>921<br>1041<br>1024<br>1140<br>2507<br><1<br><b>history1</b><br>3<br>3<br>3<br><1<br><1.0<br><b>history1</b><br>0.3<br>9.6    | 6<br>0<br>60<br><1<br>929<br>1085<br>971<br>1121<br>2529<br>0<br>history2<br>4<br>3<br>2<br><1.0<br>history2<br>0.7<br>11.5         |
|  | Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANT<br>Silicon<br>Sodium<br>Potassium<br>Fuel<br>INFRA-RED<br>Soot %<br>Nitration<br>Sulfation<br>FLUID DEGRAD. | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185(m)<br>ASTM D71844<br>ASTM D7593*                                       | 0<br>0<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>imit/base<br>>25<br>20<br>>5<br>20<br>>5<br>20<br>>5<br>20<br>>5<br>20<br>>30<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 | 4<br>0<br>58<br><1<br>924<br>1028<br>1040<br>1131<br>2563<br><1<br><i>current</i><br>3<br>3<br>0<br>▲ 3.5<br><i>current</i><br>0.4<br>11.9<br>21.9   | 3<br>0<br>57<br><1<br>921<br>1041<br>1024<br>1140<br>2507<br><1<br><b>history1</b><br>3<br>3<br><1<br><1.0<br><b>history1</b><br>0.3<br>9.6<br>20.3 | 6<br>0<br>60<br><1<br>929<br>1085<br>971<br>1121<br>2529<br>0<br>history2<br>4<br>3<br>2<br><1.0<br>history2<br>0.7<br>11.5<br>21.4 |



## **OIL ANALYSIS REPORT**



: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9

Diagnostician : Wes Davis

: 21 Mar 2023

: 22 Mar 2023

Received

Test Package : MOB 1 (Additional Tests: FuelDilution, PercentFuel)

Test denoted (\*) outside scope of accreditation, (m) method modified, (e) tested at external lab.

Validity of results and interpretation are based on the sample and information as supplied.

Diagnosed

GFL Environmental - 216 15 Bermondsey Road Toronto, ON CA M4B 0A6 Contact: Tom Hatzioannidis thatzioannidis@gflenv.com T: (416)678-9340

history1

history<sup>-</sup>

Jec23/2

Jec23/21

lec/3/7

NEG

NEG

13.2

history2

history2

NEG

NEG

13.0

Vov14/22

Vov14/22

Jov14/22

F:

CALA

ISO 17025:2017 Accredited Laboratory

Laboratory

Sample No.

Lab Number

Unique Number

: GFL0074238

: 02546582

To discuss this sample report, contact Customer Service at 1-800-268-2131.

: 5551592