

# **OIL ANALYSIS REPORT**







Machine Id 338656 Component

## Diesel Engine

PETRO CANADA DURON SHP 10W30 (--- 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.

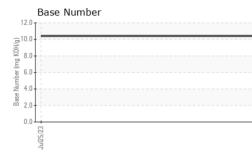
### Fluid Condition

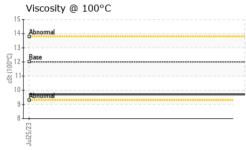
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

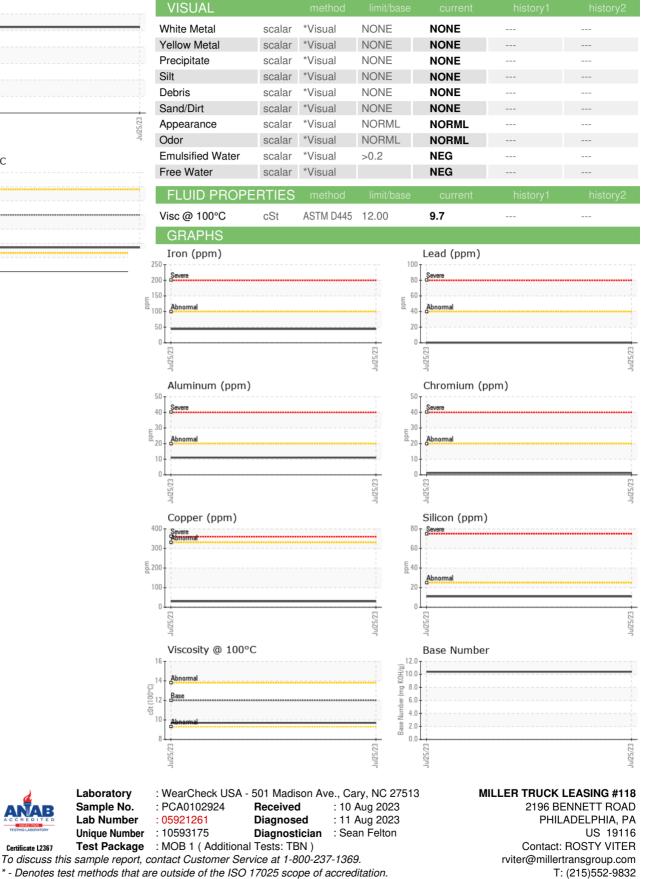
| SAMPLE INFORI   |  | method  | limit/base   | current   | history1   | history2   |
|---|--|---|--|---|--|--|
| Sample Number   |  | Client Info   |  | PCA0102924  |  |  |
| Sample Date   |  | Client Info   |  | 25 Jul 2023   |  |  |
| Machine Age   | mls  | Client Info   |  | 129336  |  |  |
| Oil Age   | mls  | Client Info   |  | 0   |  |  |
| Oil Changed   |  | Client Info   |  | Not Changd  |  |  |
| Sample Status   |  |   |  | NORMAL  |  |  |
| CONTAMINAT  | ION  | method  | limit/base   | current   | history1   | history2   |
| Fuel  |  | WC Method   | >5   | <1.0  |  |  |
| Glycol  |  | WC Method   |  | NEG   |  |  |
| WEAR METAL  | S  | method  | limit/base   | current   | history1   | history2   |
| Iron  | ppm  | ASTM D5185m   | >100   | 44  |  |  |
| Chromium  | ppm  | ASTM D5185m   | >20  | 1   |  |  |
| Nickel  | ppm  | ASTM D5185m   | >4   | <1  |  |  |
| Titanium  | ppm  | ASTM D5185m   |  | 0   |  |  |
| Silver  | ppm  | ASTM D5185m   | >3   | 0   |  |  |
| Aluminum  | ppm  | ASTM D5185m   | >20  | 11  |  |  |
| Lead  | ppm  | ASTM D5185m   | >40  | 0   |  |  |
| Copper  | ppm  | ASTM D5185m   | >330   | 30  |  |  |
| Tin   | ppm  | ASTM D5185m   | >15  | 3   |  |  |
| Vanadium  | ppm  | ASTM D5185m   |  | 0   |  |  |
| Cadmium   | ppm  | ASTM D5185m   |  | 0   |  |  |
|   |  |   |  |   |  |  |
| ADDITIVES   |  | method  | limit/base   | current   | history1   | history2   |
| Boron   | ppm  | ASTM D5185m   | limit/base   | current<br>49   | history1   | history2   |
|   | ppm<br>ppm   |   |  |   |  |  |
| Boron   |  | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | 2  | 49  |  |  |
| Boron<br>Barium   | ppm  | ASTM D5185m<br>ASTM D5185m  | 2<br>0   | 49<br>2   |  |  |
| Boron<br>Barium<br>Molybdenum   | ppm<br>ppm   | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | 2<br>0<br>50   | 49<br>2<br>44   |  |  |
| Boron<br>Barium<br>Molybdenum<br>Manganese  | ppm<br>ppm<br>ppm  | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | 2<br>0<br>50<br>0  | 49<br>2<br>44<br>11   |  |  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus  | ppm<br>ppm<br>ppm<br>ppm   | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | 2<br>0<br>50<br>0<br>950<br>1050<br>995  | 49<br>2<br>44<br>11<br>515<br>1700<br>752   |  |  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc  | 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   | 2<br>0<br>50<br>0<br>950<br>1050   | 49<br>2<br>44<br>11<br>515<br>1700  | <br><br><br>   | <br><br><br>   |
| 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  | 2<br>0<br>50<br>0<br>950<br>1050<br>995  | 49<br>2<br>44<br>11<br>515<br>1700<br>752   | <br><br><br>   | <br><br><br>   |
| 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   | 2<br>0<br>50<br>950<br>1050<br>995<br>1180   | 49<br>2<br>44<br>11<br>515<br>1700<br>752<br>922  | <br><br><br><br>   |  |
| 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  | 2<br>0<br>50<br>0<br>950<br>1050<br>995<br>1180<br>2600  | 49<br>2<br>44<br>11<br>515<br>1700<br>752<br>922<br>2586  |  |  |
| 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                     | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | 2<br>0<br>50<br>950<br>1050<br>995<br>1180<br>2600   | 49<br>2<br>44<br>11<br>515<br>1700<br>752<br>922<br>2586<br>current   | <br><br><br><br><br>history1   | <br><br><br><br><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>ASTM D5185m   | 2<br>0<br>50<br>0<br>950<br>1050<br>995<br>1180<br>2600<br><b>limit/base</b><br>>25  | 49<br>2<br>44<br>11<br>515<br>1700<br>752<br>922<br>2586<br>current<br>11   | <br><br><br><br><br>history1   | <br><br><br><br><br>history2   |
| 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   | 2<br>0<br>50<br>0<br>950<br>1050<br>995<br>1180<br>2600<br><b>limit/base</b><br>>25  | 49<br>2<br>44<br>11<br>515<br>1700<br>752<br>922<br>2586<br><u>current</u><br>11<br>4   | <br><br><br><br><br><br>history1<br>   | <br><br><br><br><br>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  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>TS               | ASTM D5185m<br>ASTM D5185m   | 2<br>0<br>50<br>950<br>1050<br>995<br>1180<br>2600<br><b>limit/base</b><br>>25   | 49<br>2<br>44<br>11<br>515<br>1700<br>752<br>922<br>2586<br><u>current</u><br>11<br>4<br>17   | <br><br><br><br><br>history1<br><br>   | <br><br><br><br>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                                     | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>TS               | ASTM D5185m<br>ASTM D5185m   | 2<br>0<br>50<br>0<br>950<br>1050<br>995<br>1180<br>2600<br><b>Imit/base</b><br>>25<br>>20<br><b>Imit/base</b><br>>3              | 49<br>2<br>44<br>11<br>515<br>1700<br>752<br>922<br>2586<br>current<br>11<br>4<br>17<br>current                                     | <br><br><br><br><br>history1<br><br><br>history1   | <br><br><br><br><br>history2<br><br><br>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>TS<br>ppm<br>ppm | ASTM D5185m<br>ASTM D5185m   | 2<br>0<br>50<br>0<br>950<br>1050<br>995<br>1180<br>2600<br><b>Imit/base</b><br>>25<br>>20<br><b>Imit/base</b><br>>3              | 49<br>2<br>44<br>11<br>515<br>1700<br>752<br>922<br>2586<br><u>current</u><br>11<br>4<br>17<br><u>current</u><br>0.3                | <br><br><br><br><br><br>history1<br><br><br>history1<br>                                     | <br><br><br><br><br>history2<br><br><br>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 %<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  | 2<br>0<br>50<br>950<br>1050<br>995<br>1180<br>2600<br><i>imit/base</i><br>>25<br>>20<br><i>imit/base</i>                         | 49<br>2<br>44<br>11<br>515<br>1700<br>752<br>922<br>2586<br><u>current</u><br>11<br>4<br>17<br><u>current</u><br>0.3<br>7.8         | <br><br><br><br><br><br>history1<br><br><br>history1<br><br>                                 | <br><br><br><br><br>history2<br><br><br>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 %<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 D7844<br>*ASTM D7844<br>*ASTM D7844                               | 2<br>0<br>50<br>0<br>950<br>1050<br>995<br>1180<br>2600<br><b>imit/base</b><br>>25<br>20<br><b>imit/base</b><br>>3<br>>20<br>>30 | 49<br>2<br>44<br>11<br>515<br>1700<br>752<br>922<br>2586<br><b>current</b><br>11<br>4<br>17<br><b>current</b><br>0.3<br>7.8<br>22.9 | <br><br><br><br><br><br>history1<br><br>history1<br><br>history1                             | <br><br><br><br>history2<br><br>history2<br><br>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 %<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 D7844<br>*ASTM D7844 | 2<br>0<br>50<br>950<br>1050<br>995<br>1180<br>2600<br><i>imit/base</i><br>>25<br>>20<br><i>imit/base</i><br>>3<br>>20<br>>30     | 49<br>2<br>44<br>11<br>515<br>1700<br>752<br>922<br>2586<br>current<br>11<br>4<br>17<br>current<br>0.3<br>7.8<br>22.9<br>current    | <br><br><br><br><br><br>history1<br><br><br>history1<br><br><br>history1<br><br><br>history1 | <br><br><br><br>history2<br><br>history2<br><br>history2<br><br>history2 |



# **OIL ANALYSIS REPORT**







\* - 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)

Certificate L2367

Laboratory

Sample No.

Lab Number

F: (215)552-9892