

# **OIL ANALYSIS REPORT**





#### Component Diesel Engine Fluid

## PETRO CANADA DURON SHP 10W30 (--- GAL)

### DIAGNOSIS

#### Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

#### Wear

Metal levels are typical for a new component breaking in.

#### Contamination

Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. No other contaminants were detected in the oil.

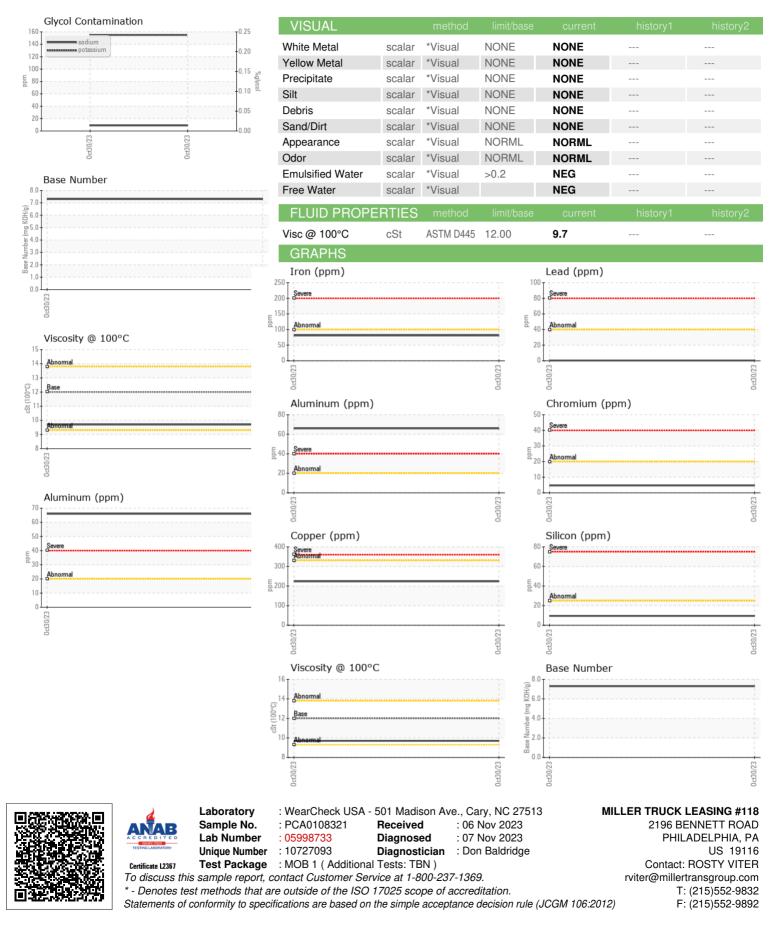
#### Fluid Condition

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

| AL)   |  |   |  | Oct2023  |  |  |
|---|--|---|--|--|--|--|
| SAMPLE INFOR  | MATION   | method  | limit/base   | current  | history1   | history2   |
| Sample Number   |  | Client Info   |  | PCA0108321   |  |  |
| Sample Date   |  | Client Info   |  | 30 Oct 2023  |  |  |
| Machine Age   | mls  | Client Info   |  | 34998  |  |  |
| 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   | 81   |  |  |
| Chromium  | ppm  | ASTM D5185m   | >20  | 5  |  |  |
| Nickel  | ppm  | ASTM D5185m   | >4   | 0  |  |  |
| Titanium  | ppm  | ASTM D5185m   |  | 0  |  |  |
| Silver  | ppm  | ASTM D5185m   | >3   | 0  |  |  |
| Aluminum  | ppm  | ASTM D5185m   | >20  | 66   |  |  |
| Lead  | ppm  | ASTM D5185m   | >40  | <1   |  |  |
| Copper  | ppm  | ASTM D5185m   | >330   | 224  |  |  |
| Tin   | ppm  | ASTM D5185m   | >15  | 2  |  |  |
| Vanadium  | ppm  | ASTM D5185m   |  | 0  |  |  |
| Cadmium   | ppm  | ASTM D5185m   |  | 0  |  |  |
|   |  |   |  |  |  |  |
| ADDITIVES   |  | method  | limit/base   | current  | history1   | history2   |
|   | ppm  | method<br>ASTM D5185m   | limit/base<br>2  | current<br>26  | history1   | history2   |
| Boron   | ppm<br>ppm   |   |  |  |  |  |
| Boron<br>Barium   |  | ASTM D5185m   | 2  | 26   |  |  |
| Boron<br>Barium<br>Molybdenum   | ppm  | ASTM D5185m<br>ASTM D5185m  | 2<br>0   | 26<br>0  |  |  |
| Boron<br>Barium<br>Molybdenum<br>Manganese  | ppm<br>ppm   | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | 2<br>0<br>50   | 26<br>0<br>42  |  |  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium   | ppm<br>ppm<br>ppm  | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | 2<br>0<br>50<br>0  | 26<br>0<br>42<br>4   |  |  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium  | ppm<br>ppm<br>ppm<br>ppm   | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | 2<br>0<br>50<br>0<br>950   | 26<br>0<br>42<br>4<br>474  |  |  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus  | 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   | 26<br>0<br>42<br>4<br>474<br>1688  | <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                             | 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  | 26<br>0<br>42<br>4<br>474<br>1688<br>644   | <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<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<br>995<br>1180  | 26<br>0<br>42<br>4<br>474<br>1688<br>644<br>795  | <br><br><br><br>   |  |
| 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  | 2<br>0<br>50<br>950<br>1050<br>995<br>1180<br>2600   | 26<br>0<br>42<br>4<br>474<br>1688<br>644<br>795<br>1611  |  |  |
| 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               | 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>limit/base  | 26<br>0<br>42<br>4<br>1688<br>644<br>795<br>1611<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<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<br><b>method</b><br>ASTM D5185m  | 2<br>0<br>50<br>0<br>950<br>1050<br>995<br>1180<br>2600<br>limit/base  | 26<br>0<br>42<br>4<br>1688<br>644<br>795<br>1611<br><u>current</u><br>10   | <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  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ypm        | 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<br>ASTM D5185m   | 2<br>0<br>50<br>0<br>950<br>1050<br>995<br>1180<br>2600<br>limit/base<br>>25   | 26<br>0<br>42<br>4<br>474<br>1688<br>644<br>795<br>1611<br><u>current</u><br>10<br>9   | <br><br><br><br><br>history1                                     | <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>ypm        | ASTM D5185m<br>ASTM D5185m  | 2<br>0<br>50<br>0<br>950<br>1050<br>995<br>1180<br>2600<br>limit/base<br>>25   | 26<br>0<br>42<br>4<br>1688<br>644<br>795<br>1611<br><i>current</i><br>10<br>9<br>155   | <br><br><br><br><br>history1<br><br>                             | <br><br><br><br>history2<br><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  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ypm<br>ypm | ASTM D5185m<br>ASTM D5185m  | 2<br>0<br>50<br>950<br>1050<br>995<br>1180<br>2600<br>limit/base<br>>25<br>>20<br>limit/base                                   | 26<br>0<br>42<br>4<br>474<br>1688<br>644<br>795<br>1611<br><i>current</i><br>10<br>9<br>155<br><i>current</i>                        | <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>ytts       | ASTM D5185m<br>ASTM D5185m                               | 2<br>0<br>50<br>0<br>950<br>1050<br>995<br>1180<br>2600<br>limit/base<br>>25<br>>20<br>limit/base<br>>3                        | 26<br>0<br>42<br>4<br>474<br>1688<br>644<br>795<br>1611<br><i>current</i><br>10<br>9<br>155<br><i>current</i><br>0.5                 | <br><br><br><br><br>history1<br><br><br>history1<br>             | <br><br><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              | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ypm<br>ypm | ASTM D5185m<br>ASTM D5185m | 2<br>0<br>50<br>0<br>950<br>1050<br>995<br>1180<br>2600<br><i>limit/base</i><br>>25<br>>20<br><i>limit/base</i><br>>3<br>>20   | 26<br>0<br>42<br>4<br>474<br>1688<br>644<br>795<br>1611<br><i>current</i><br>10<br>9<br>155<br><i>current</i><br>0.5<br>10.4         | history1 history1  | <br><br><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>ypm<br>ypm | ASTM D5185m<br>ASTM D5185m | 2<br>0<br>50<br>0<br>950<br>1050<br>995<br>1180<br>2600<br>imit/base<br>>25<br>20<br>imit/base<br>>3<br>>20<br>30<br>imit/base | 26<br>0<br>42<br>4<br>474<br>1688<br>644<br>795<br>1611<br><i>current</i><br>10<br>9<br>155<br><i>current</i><br>0.5<br>10.4<br>23.6 | <br><br><br><br><br><br>history1<br><br>history1<br><br>history1 | <br><br><br><br><br><br>history2<br><br>history2<br><br>history2 |



# **OIL ANALYSIS REPORT**



Contact/Location: ROSTY VITER - MILPHINE