

## **OIL ANALYSIS REPORT**

#### Sample Rating Trend



### Machine Id 313854

#### Component Diesel Engine

Fluid PETRO CANADA DURON SHP 10W30 (--- QTS)

#### 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.

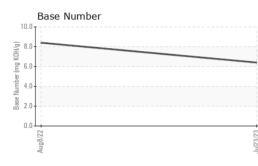
#### Fluid Condition

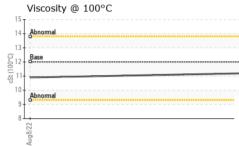
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

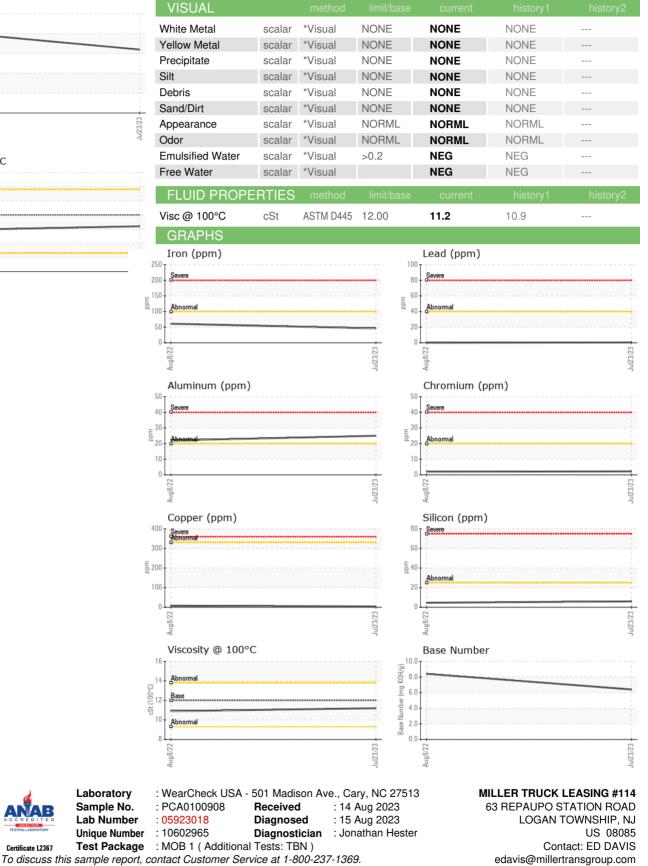
| SAMPLE INFORI   | MATION  | method   | limit/base  | current   | history1  | history2   |
|---|---|--|---|---|---|--|
| Sample Number   |   | Client Info  |   | PCA0100908  | PCA0076057  |  |
| Sample Date   |   | Client Info  |   | 23 Jul 2023   | 08 Aug 2022   |  |
| Machine Age   | mls   | Client Info  |   | 90756   | 57425   |  |
| Oil Age   | mls   | Client Info  |   | 43331   | 0   |  |
| Oil Changed   |   | Client Info  |   | Changed   | Changed   |  |
| Sample Status   |   |  |   | NORMAL  | NORMAL  |  |
| CONTAMINAT  | ION   | method   | limit/base  | current   | history1  | history2   |
| Fuel  |   | WC Method  | >5  | <1.0  | <1.0  |  |
| Glycol  |   | WC Method  |   | NEG   | NEG   |  |
| WEAR METAL  | S   | method   | limit/base  | current   | history1  | history2   |
| Iron  | ppm   | ASTM D5185m  | >100  | 46  | 61  |  |
| Chromium  | ppm   | ASTM D5185m  | >20   | 2   | 2   |  |
| Nickel  | ppm   | ASTM D5185m  | >4  | 0   | 0   |  |
| Titanium  | ppm   | ASTM D5185m  |   | <1  | 0   |  |
| Silver  | ppm   | ASTM D5185m  | >3  | 0   | 0   |  |
| Aluminum  | ppm   | ASTM D5185m  | >20   | 25  | 22  |  |
| Lead  | ppm   | ASTM D5185m  | >40   | <1  | 0   |  |
| Copper  | ppm   | ASTM D5185m  | >330  | 4   | 8   |  |
| Tin   | ppm   | ASTM D5185m  | >15   | 2   | 2   |  |
| Vanadium  | ppm   | ASTM D5185m  |   | <1  | 0   |  |
| Cadmium   | ppm   | ASTM D5185m  |   | <1  | 0   |  |
|   |   |  |   |   |   |  |
| ADDITIVES   |   | method   |   |   |   | history2   |
| ADDITIVES<br>Boron  | ppm   | Method<br>ASTM D5185m  | limit/base  | current<br>6  | history1<br>6   | history2   |
|   | ppm<br>ppm  |  |   |   |   |  |
| Boron<br>Barium   | ppm   | ASTM D5185m  | 2   | 6   | 6   |  |
| Boron<br>Barium<br>Molybdenum   | ppm<br>ppm  | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | 2<br>0<br>50  | 6<br><1   | 6<br>0  |  |
| Boron<br>Barium<br>Molybdenum<br>Manganese  | ppm<br>ppm<br>ppm   | ASTM D5185m<br>ASTM D5185m   | 2<br>0<br>50<br>0   | 6<br><1<br>68   | 6<br>0<br>65  |  |
| Boron<br>Barium<br>Molybdenum   | ppm<br>ppm<br>ppm<br>ppm  | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | 2<br>0<br>50  | 6<br><1<br>68<br>1  | 6<br>0<br>65<br>1   | <br>   |
| 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  | 2<br>0<br>50<br>0<br>950  | 6<br><1<br>68<br>1<br>931   | 6<br>0<br>65<br>1<br>939  |  |
| 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   | 6<br><1<br>68<br>1<br>931<br>1147   | 6<br>0<br>65<br>1<br>939<br>1147<br>1014  | <br><br>   |
| 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   | 2<br>0<br>50<br>0<br>950<br>1050  | 6<br><1<br>68<br>1<br>931<br>1147<br>941  | 6<br>0<br>65<br>1<br>939<br>1147  | <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  | 6<br><1<br>68<br>1<br>931<br>1147<br>941<br>1205  | 6<br>0<br>65<br>1<br>939<br>1147<br>1014<br>1256  | <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>950<br>1050<br>995<br>1180<br>2600  | 6<br><1<br>68<br>1<br>931<br>1147<br>941<br>1205<br>3387  | 6<br>0<br>65<br>1<br>939<br>1147<br>1014<br>1256<br>3549  |  |
| 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>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>950<br>1050<br>995<br>1180<br>2600  | 6<br><1<br>68<br>1<br>931<br>1147<br>941<br>1205<br>3387<br>current   | 6<br>0<br>65<br>1<br>939<br>1147<br>1014<br>1256<br>3549<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                            | 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>950<br>1050<br>995<br>1180<br>2600  | 6<br><1<br>68<br>1<br>931<br>1147<br>941<br>1205<br>3387<br>current<br>6  | 6<br>0<br>65<br>1<br>939<br>1147<br>1014<br>1256<br>3549<br>history1<br>5   | <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><b>method</b><br>ASTM D5185m   | 2<br>0<br>50<br>950<br>1050<br>995<br>1180<br>2600<br>limit/base<br>>25   | 6<br><1<br>68<br>1<br>931<br>1147<br>941<br>1205<br>3387<br>current<br>6<br>33  | 6<br>0<br>65<br>1<br>939<br>1147<br>1014<br>1256<br>3549<br>history1<br>5<br>1  | <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  | 6<br><1<br>68<br>1<br>931<br>1147<br>941<br>1205<br>3387<br>current<br>6<br>33<br>33  | 6<br>0<br>65<br>1<br>939<br>1147<br>1014<br>1256<br>3549<br>history1<br>5<br>1<br>25  | <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<br>INFRA-RED                                     | 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>limit/base</b><br>>25<br>>20<br><b>limit/base</b>   | 6<br><1<br>68<br>1<br>931<br>1147<br>941<br>1205<br>3387<br>current<br>6<br>33<br>33<br>current                                   | 6<br>0<br>65<br>1<br>939<br>1147<br>1014<br>1256<br>3549<br>history1<br>5<br>1<br>25<br>1<br>25<br>history1<br>0.7                  | <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><b>TS</b><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>limit/base</b><br>>25<br>>20<br><b>limit/base</b>   | 6<br><1<br>68<br>1<br>931<br>1147<br>941<br>1205<br>3387<br>current<br>6<br>33<br>33<br>33<br>current<br>0.9                      | 6<br>0<br>65<br>1<br>939<br>1147<br>1014<br>1256<br>3549<br>history1<br>5<br>1<br>25<br>1<br>25<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              | 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>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                              | 6<br><1<br>68<br>1<br>931<br>1147<br>941<br>1205<br>3387<br>current<br>6<br>33<br>33<br>current<br>0.9<br>11.7                    | 6<br>0<br>65<br>1<br>939<br>1147<br>1014<br>1256<br>3549<br>history1<br>5<br>1<br>25<br>1<br>25<br>history1<br>0.7<br>11.7          | <br><br><br><br><br>history2<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>ppm<br>ppm              | ASTM D5185m<br>ASTM D5185m               | 2<br>0<br>50<br>1050<br>955<br>1050<br>995<br>1180<br>2600<br><b>imit/base</b><br>>25<br><b>imit/base</b><br>>3<br>>20                                    | 6<br><1<br>68<br>1<br>931<br>1147<br>941<br>1205<br>3387<br>current<br>6<br>33<br>33<br>33<br>current<br>0.9<br>11.7<br>22.8      | 6<br>0<br>65<br>1<br>939<br>1147<br>1014<br>1256<br>3549<br>history1<br>5<br>1<br>25<br>1<br>25<br>history1<br>0.7<br>11.7<br>23.0  | <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 D7624<br>*ASTM D7415 | 2<br>0<br>0<br>50<br>0<br>950<br>1050<br>995<br>1180<br>2600<br>2600<br>25<br>20<br>220<br>20<br>20<br>20<br>20<br>20<br>33<br>20<br>20<br>20<br>20<br>20 | 6<br><1<br>68<br>1<br>931<br>1147<br>941<br>1205<br>3387<br>current<br>6<br>33<br>33<br>current<br>0.9<br>11.7<br>22.8<br>current | 6<br>0<br>65<br>1<br>939<br>1147<br>1014<br>1256<br>3549<br>history1<br>5<br>1<br>25<br>history1<br>0.7<br>11.7<br>23.0<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)

Laboratory

Sample No.

Lab Number

Certificate L2367

T: (856)214-3521

F: (856)214-3663