

# **OIL ANALYSIS REPORT**

### Sample Rating Trend





#### 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.

|   |   |   |   |  |   | V.  |  |
|---|---|---|---|--|---|---|--|
| TS)   |   | Dec2018 De  | cc2019 Jun2020 Feb  | 52021 Oct2021 Jun2022 1  | Mar2023   |   |  |
| SAMPLE INFORM   | MATION  | method  | limit/base  | current  | history1  | history2  |  |
| Sample Number   |   | Client Info   |   | PCA0098946   | PCA0089945  | PCA0082208  |  |
| Sample Date   |   | Client Info   |   | 02 Nov 2023  | 11 Mar 2023   | 21 Nov 2022   |  |
| Machine Age   | mls   | Client Info   |   | 209540   | 180221  | 167142  |  |
| Dil Age   | mls   | Client Info   |   | 0  | 0   | 18747   |  |
| Dil Changed   |   | Client Info   |   | Changed  | Changed   | Changed   |  |
| Sample Status   |   |   |   | NORMAL   | NORMAL  | NORMAL  |  |
| CONTAMINATI   | ON  | 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 METALS   | S   | method  | limit/base  | current  | history1  | history2  |  |
| ron   | ppm   | ASTM D5185m   | >100  | 18   | 16  | 27  |  |
| Chromium  | ppm   | ASTM D5185m   | >20   | <1   | <1  | <1  |  |
| lickel  | ppm   | ASTM D5185m   | >4  | 0  | 0   | 0   |  |
| Titanium  | ppm   | ASTM D5185m   | ~ 7   | 0  | <1  | 0   |  |
| Silver  | ppm   | ASTM D5185m   | >3  | <1   | 0   | 0   |  |
| Numinum   | ppm   |   | >20   | 8  | 8   | 14  |  |
| ead   | ppm   | ASTM D5185m   | >40   | 4  | 2   | 5   |  |
| Copper  | ppm   |   | >330  | 2  | 6   | 3   |  |
| in  | ppm   | ASTM D5185m   | >15   | -<br><1  | <1  | 2   |  |
| /anadium  | ppm   | ASTM D5185m   |   | 0  | 0   | 0   |  |
| Cadmium   | ppm   | ASTM D5185m   |   | 0  | 0   | 0   |  |
| ADDITIVES   |   | method  | limit/base  | current  | history1  | history2  |  |
| Boron   | ppm   | ASTM D5185m   | 2   | 5  | 7   | 8   |  |
| Barium  | ppm   | ASTM D5185m   | 0   | 0  | 0   | 0   |  |
| /lolybdenum   | ppm   | ASTM D5185m   | 50  | 67   | 62  | 70  |  |
| langanese   | ppm   | ASTM D5185m   | 0   | 0  | 2   | <1  |  |
| /agnesium   | ppm   | ASTM D5185m   | 950   | 940  | 886   | 903   |  |
| Calcium   |   |   |   | 340  | 000   | 000   |  |
| hosphorus   | ppm   | ASTM D5185m   | 1050  | 1349   | 1218  | 1224  |  |
| noopnorao   | ppm<br>ppm  | ASTM D5185m<br>ASTM D5185m  |   |  |   |   |  |
|   |   |   | 1050  | 1349   | 1218  | 1224  |  |
| Zinc  | ppm   | ASTM D5185m   | 1050<br>995   | 1349<br>1144   | 1218<br>977   | 1224<br>1007  |  |
| Zinc  | ppm<br>ppm<br>ppm   | ASTM D5185m<br>ASTM D5185m  | 1050<br>995<br>1180   | 1349<br>1144<br>1383<br>3324   | 1218<br>977<br>1197   | 1224<br>1007<br>1230  |  |
| Zinc<br>Sulfur<br>CONTAMINAN  | ppm<br>ppm<br>ppm   | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | 1050<br>995<br>1180<br>2600   | 1349<br>1144<br>1383<br>3324   | 1218<br>977<br>1197<br>3176   | 1224<br>1007<br>1230<br>3564  |  |
| zinc<br>Sulfur<br>CONTAMINAN <sup>-</sup><br>Silicon  | ppm<br>ppm<br>ppm<br>TS   | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>method   | 1050<br>995<br>1180<br>2600<br>limit/base   | 1349<br>1144<br>1383<br>3324<br>current  | 1218<br>977<br>1197<br>3176<br>history1   | 1224<br>1007<br>1230<br>3564<br>history2  |  |
| Zinc<br>Sulfur<br>CONTAMINAN<br>Silicon<br>Sodium   | ppm<br>ppm<br>ppm<br>TS<br>ppm                                    | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br><b>method</b><br>ASTM D5185m   | 1050<br>995<br>1180<br>2600<br>limit/base<br>>25  | 1349<br>1144<br>1383<br>3324<br>current<br>4   | 1218<br>977<br>1197<br>3176<br>history1<br>4  | 1224<br>1007<br>1230<br>3564<br>history2<br>5   |  |
| Zinc<br>Sulfur<br>CONTAMINAN<br>Silicon<br>Sodium   | ppm<br>ppm<br>ppm<br>TS<br>ppm<br>ppm                             | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br><b>method</b><br>ASTM D5185m<br>ASTM D5185m  | 1050<br>995<br>1180<br>2600<br>limit/base<br>>25  | 1349<br>1144<br>1383<br>3324<br>current<br>4<br>8<br>6                                   | 1218<br>977<br>1197<br>3176<br>history1<br>4<br>10  | 1224<br>1007<br>1230<br>3564<br>history2<br>5<br>11   |  |
| Zinc<br>Sulfur<br>CONTAMINAN<br>Silicon<br>Sodium<br>Potassium<br>INFRA-RED                                     | ppm<br>ppm<br>ppm<br>TS<br>ppm<br>ppm                             | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>Method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m                                    | 1050<br>995<br>1180<br>2600<br><i>limit/base</i><br>>25<br>>20  | 1349<br>1144<br>1383<br>3324<br>current<br>4<br>8<br>6                                   | 1218<br>977<br>1197<br>3176<br>history1<br>4<br>10<br>2                                       | 1224<br>1007<br>1230<br>3564<br>history2<br>5<br>11<br>6  |  |
| Zinc<br>Sulfur<br>CONTAMINAN<br>Silicon<br>Sodium<br>Potassium<br>INFRA-RED<br>Soot %                           | ppm<br>ppm<br>TS<br>ppm<br>ppm<br>ppm                             | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>Method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>Method                          | 1050<br>995<br>1180<br>2600<br>limit/base<br>>25<br>>20<br>limit/base                                   | 1349<br>1144<br>1383<br>3324<br>current<br>4<br>8<br>6<br>current                        | 1218<br>977<br>1197<br>3176<br>history1<br>4<br>10<br>2<br>history1                           | 1224<br>1007<br>1230<br>3564<br>history2<br>5<br>11<br>6<br>history2                                    |  |
| Zinc<br>Sulfur<br>CONTAMINAN<br>Silicon<br>Sodium<br>Potassium  | ppm                           | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br><b>method</b><br>*ASTM D7844              | 1050<br>995<br>1180<br>2600<br>limit/base<br>>25<br>>20<br>limit/base<br>>3                             | 1349<br>1144<br>1383<br>3324<br>current<br>4<br>8<br>6<br>current<br>1.3                 | 1218<br>977<br>1197<br>3176<br>history1<br>4<br>10<br>2<br>history1<br>1                      | 1224<br>1007<br>1230<br>3564<br>history2<br>5<br>11<br>6<br>history2<br>2                               |  |
| Zinc<br>Sulfur<br>CONTAMINAN<br>Silicon<br>Sodium<br>Potassium<br>INFRA-RED<br>Soot %<br>Vitration              | ppm<br>ppm<br>pm<br>TS<br>ppm<br>ppm<br>ppm<br>ppm<br>%<br>Abs/cm | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>*ASTM D7844<br>*ASTM D7824<br>*ASTM D7415 | 1050<br>995<br>1180<br>2600<br>limit/base<br>>25<br>>20<br>limit/base<br>>3<br>>20                      | 1349<br>1144<br>1383<br>3324<br>current<br>4<br>8<br>6<br>current<br>1.3<br>12.2<br>22.1 | 1218<br>977<br>1197<br>3176<br>history1<br>4<br>10<br>2<br>history1<br>1<br>1<br>11.2         | 1224<br>1007<br>1230<br>3564<br>history2<br>5<br>11<br>6<br>history2<br>2<br>2<br>15.3                  |  |
| Zinc<br>Sulfur<br>CONTAMINAN<br>Silicon<br>Sodium<br>Potassium<br>INFRA-RED<br>Soot %<br>Nitration<br>Sulfation | ppm<br>ppm<br>pm<br>TS<br>ppm<br>ppm<br>ppm<br>ppm<br>%<br>Abs/cm | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>*ASTM D7844<br>*ASTM D7824<br>*ASTM D7415 | 1050<br>995<br>1180<br>2600<br><b>limit/base</b><br>>25<br>>20<br><b>limit/base</b><br>>3<br>>20<br>>30 | 1349<br>1144<br>1383<br>3324<br>current<br>4<br>8<br>6<br>current<br>1.3<br>12.2<br>22.1 | 1218<br>977<br>1197<br>3176<br>history1<br>4<br>10<br>2<br>history1<br>1<br>1<br>11.2<br>20.4 | 1224<br>1007<br>1230<br>3564<br><b>history2</b><br>5<br>11<br>6<br><b>history2</b><br>2<br>15.3<br>26.3 |  |



cSt (100°C)

Abnorm

Jec31/

# **OIL ANALYSIS REPORT**

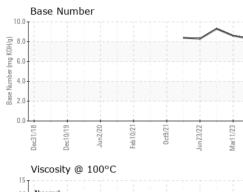
\*Visual

scalar

NONE

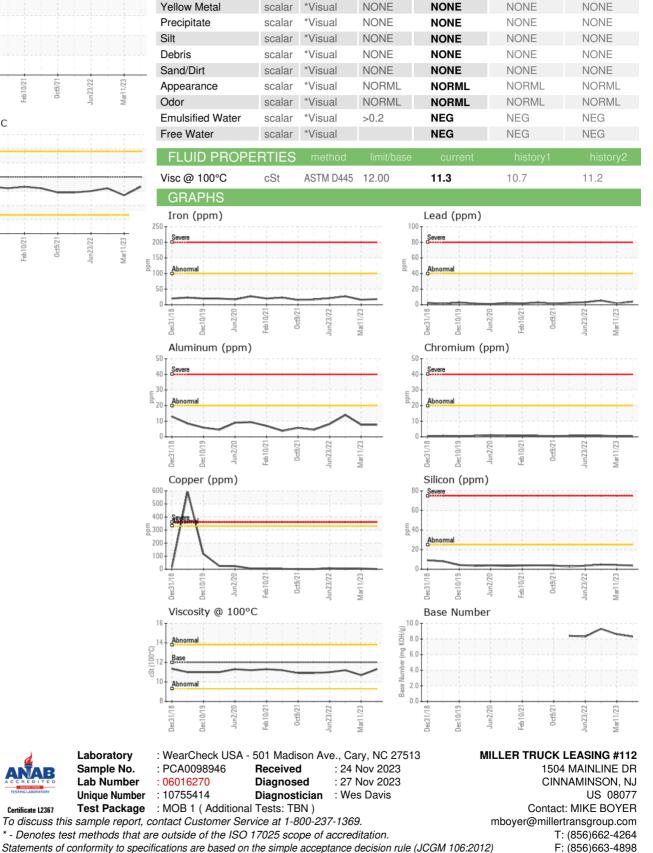
VISUAL

White Metal



ah10/71

un73/77



NONE

NONE

NONE



Report Id: MILPEN [WUSCAR] 06016270 (Generated: 11/27/2023 09:31:21) Rev: 1

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