

## **OIL ANALYSIS REPORT**

Sample Rating Trend



#### Area Supermarket - Tractor Machine Id FREIGHTLINER 107A3686

Component Diesel Engine

PETRO CANADA DURON SHP 10W30 (11 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.

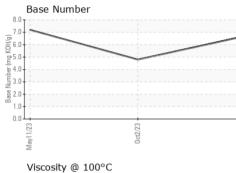
### Fluid Condition

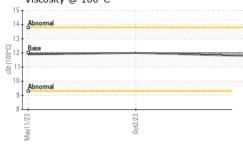
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| SAMPLE INFORI   | MATION   | method   | limit/base  | current   | history1   | history2   |
|---|--|--|---|---|--|--|
| Sample Number   |  | Client Info  |   | PCA0111015  | PCA0104102   | PCA0097062   |
| Sample Date   |  | Client Info  |   | 10 Jan 2024   | 02 Oct 2023  | 11 May 2023  |
| Machine Age   | mls  | Client Info  |   | 352428  | 326947   | 299136   |
| Oil Age   | mls  | Client Info  |   | 25481   | 27811  | 23716  |
| Oil Changed   |  | Client Info  |   | Changed   | Changed  | Not Changd   |
| Sample Status   |  |  |   | NORMAL  | NORMAL   | NORMAL   |
| CONTAMINAT  | ION  | 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 METAL  | S  | method   | limit/base  | current   | history1   | history2   |
| Iron  |  | ASTM D5185m  | >80   | 20  | 41   | 17   |
| Chromium  | ppm<br>ppm   | ASTM D5185m  | >5  | 1   | 2  | 1  |
| Nickel  | ppm  | ASTM D5185m  | >2  | ،<br><1   | <1   | <1   |
| Titanium  | ppm  | ASTM D5185m  | ~_  | 0   | 0  | 0  |
| Silver  | ppm  | ASTM D5185m  | >3  | ۰<br><1   | <1   | <1   |
| Aluminum  | ppm  | ASTM D5185m  | >30   | 10  | 13   | 8  |
| Lead  | ppm  |  | >30   | <1  | 0  | 0  |
| Copper  | ppm  |  | >150  | 11  | 21   | 18   |
| Tin   | ppm  | ASTM D5185m  | >5  | 1   | 2  | 2  |
| Vanadium  | ppm  | ASTM D5185m  |   | 0   | 0  | <1   |
|   | le le  |  |   | -   |  |  |
| Cadmium   | ppm  | ASTM D5185m  |   | 0   | 0  | 0  |
| Cadmium<br>ADDITIVES  | ppm  | ASTM D5185m<br>method  | limit/base  | 0<br>current  | 0<br>history1  | 0<br>history2  |
| ADDITIVES   |  | method   |   | current   | history1   | history2   |
| ADDITIVES<br>Boron  | ppm  | method<br>ASTM D5185m  | 2   | current<br>10   | history1<br>11   | history2<br>46   |
| ADDITIVES<br>Boron<br>Barium  | ppm<br>ppm   | method<br>ASTM D5185m<br>ASTM D5185m   | 2<br>0  | current<br>10<br>0  | history1<br>11<br>0  | history2<br>46<br>0  |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum  | ppm<br>ppm<br>ppm  | method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | 2<br>0<br>50  | current<br>10<br>0<br>64  | history1<br>11   | history2<br>46   |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese   | ppm<br>ppm<br>ppm<br>ppm   | method<br>ASTM D5185m<br>ASTM D5185m   | 2<br>0  | current<br>10<br>0<br>64<br><1  | history1<br>11<br>0<br>68  | history2<br>46<br>0<br>69  |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum  | ppm<br>ppm<br>ppm<br>ppm<br>ppm                                    | method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | 2<br>0<br>50<br>0<br>950  | current<br>10<br>0<br>64  | history1<br>11<br>0<br>68<br>1   | history2<br>46<br>0<br>69<br><1  |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium   | ppm<br>ppm<br>ppm<br>ppm<br>ppm                                    | method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | 2<br>0<br>50<br>0   | current<br>10<br>0<br>64<br><1<br>918   | history1<br>11<br>0<br>68<br>1<br>824  | history2<br>46<br>0<br>69<br><1<br>899   |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium  | ppm<br>ppm<br>ppm<br>ppm<br>ppm                                    | method<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  | current           10           0           64           <1           918           1119   | history1<br>11<br>0<br>68<br>1<br>824<br>1165  | history2<br>46<br>0<br>69<br><1<br>899<br>1233   |
| ADDITIVES<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                             | method<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   | current           10           0           64           <1           918           1119           1088  | history1 11 0 68 1 824 1165 976  | history2<br>46<br>0<br>69<br><1<br>899<br>1233<br>1052   |
| ADDITIVES<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               | method<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  | current           10           0           64           <1           918           1119           1088           1318   | history1 11 0 68 1 824 1165 976 1247   | history2           46           0           69           <1           899           1233           1052           1343   |
| ADDITIVES<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<br>ppm               | method<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   | Current 10 0 64 <1 918 1119 1088 1318 2807  | history1 11 0 68 1 824 1165 976 1247 2330  | history2           46           0           69           <1           899           1233           1052           1343           3599  |
| ADDITIVES<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<br>ppm        | method<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  | current         10         0         64         <1         918         1119         1088         1318         2807         current  | history1 11 0 68 1 824 1165 976 1247 2330 history1   | history2<br>46<br>0<br>69<br><1<br>899<br>1233<br>1052<br>1343<br>3599<br>history2   |
| ADDITIVES<br>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>ppm        | method           ASTM D5185m   | 2<br>0<br>50<br>950<br>1050<br>995<br>1180<br>2600<br><b>limit/base</b><br>>20  | current           10           0           64           <1           918           1119           1088           1318           2807           current           6  | history1           11           0           68           1           824           1165           976           1247           2330           history1           10  | history2           46           0           69           <1           899           1233           1052           1343           3599           history2           7   |
| ADDITIVES<br>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>ppm<br>ppm | method           ASTM D5185m   | 2<br>0<br>50<br>950<br>1050<br>995<br>1180<br>2600<br><b>limit/base</b><br>>20  | current           10           0           64           <1           918           1119           1088           1318           2807           current           6           1  | history1           11           0           68           1           824           1165           976           1247           2330           history1           10           3  | history2         46         0         69         <1         899         1233         1052         1343         3599         history2         7         <1  |
| ADDITIVES<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>ppm<br>ppm | method           ASTM D5185m   | 2<br>0<br>50<br>950<br>1050<br>995<br>1180<br>2600<br><b>limit/base</b><br>>20  | current         10         0         64         <1         918         1119         1088         1318         2807         current         6         1         3  | history1           11           0           68           1           824           1165           976           1247           2330           history1           10           3           8                              | history2         46         0         69         <1         899         1233         1052         1343         3599         history2         7         <1         3  |
| ADDITIVES<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>ppm<br>ppm | method           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>>20  | current         10         0         64         <1         918         1119         1088         1318         2807         current         6         1         3         current                                      | history1         11         0         68         1         824         1165         976         1247         2330         history1         10         3         8         history1                                       | history2         46         0         69         <1         899         1233         1052         1343         3599         history2         7         <1         3         history2   |
| ADDITIVES<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<br>Soot %              | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | method           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>>20<br>\$20                                | current         10         0         64         <1         918         1119         1088         1318         2807         current         6         1         3         current         0.9                          | history1         11         0         68         1         824         1165         976         1247         2330         history1         10         3         8         history1         1.3                           | history2           46           0           69           <1           899           1233           1052           1343           3599           history2           7           <1           3           history2           0.6 |
| ADDITIVES<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<br>Soot %<br>Nitration | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | method           ASTM D5185m   | 2<br>0<br>50<br>950<br>1050<br>995<br>1180<br>2600<br><i>imit/base</i><br>>20<br><i>imit/base</i><br>>20                  | current         10         0         64         <1         918         1119         1088         1318         2807         current         6         1         3         current         0.9         9.2              | history1         11         0         68         1         824         1165         976         1247         2330         history1         10         3         8         history1         1.3         10.8              | history2         46         0         69         <1         899         1233         1052         1343         3599         history2         7         <1         3         history2         0         6         8.2           |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation                                       | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | method           ASTM D5185m           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>>20<br><b>imit/base</b><br>>3<br>>20<br>>3 | current         10         0         64         <1         918         1119         1088         1318         2807         current         6         1         3         current         0.9         9.2         21.0 | history1         11         0         68         1         824         1165         976         1247         2330         history1         10         3         8         history1         1.3         10.8         24.3 | history2         46         0         69         <1         899         1233         1052         1343         3599         history2         7         <1         3         history2         0.6         8.2         20.4      |



# **OIL ANALYSIS REPORT**





|   | VISUAL  |  | method                           | limit/base  | current     | history1                                   | history2                                    |
|---|---|--|----------------------------------|---|-------------|--|---|
|   | White Metal   | scalar                                       | *Visual                          | NONE  | NONE        | NONE                                       | NONE  |
|   | Yellow Metal  | scalar                                       | *Visual                          | NONE  | NONE        | NONE                                       | NONE  |
|   | Precipitate   | scalar                                       | *Visual                          | NONE  | NONE        | NONE                                       | NONE  |
|   | Silt  | scalar                                       | *Visual                          | NONE  | NONE        | NONE                                       | NONE  |
|   | Debris  | scalar                                       | *Visual                          | NONE  | NONE        | NONE                                       | NONE  |
|   | Sand/Dirt   | scalar                                       | *Visual                          | NONE  | NONE        | NONE                                       | NONE  |
| Jan 10/24   | Appearance  | scalar                                       | *Visual                          | NORML   | NORML       | NORML                                      | NORML                                       |
| Jan   | Odor  | scalar                                       | *Visual                          | NORML   | NORML       | NORML                                      | NORML                                       |
|   | Emulsified Water  | scalar                                       | *Visual                          | >0.2  | NEG         | NEG  | NEG   |
|   | Free Water  | scalar                                       | *Visual                          |   | NEG         | NEG  | NEG   |
|   | FLUID PROP  | ERTIES                                       | method                           | limit/base  | current     | history1                                   | history2                                    |
|   | Visc @ 100°C  | cSt  | ASTM D445                        | 12.00   | 11.8        | 12.0                                       | 11.9  |
|   | GRAPHS  |  |                                  |   |             |  |   |
|   | Ferrous Alloys  |  |                                  |   |             |  |   |
|   | 40 - iron   | $\wedge$                                     |                                  |   |             |  |   |
|   | 35 - nickel   |  |                                  |   |             |  |   |
|   | 30  |  |                                  |   |             |  |   |
|   | E 25<br>20  |  |                                  |   |             |  |   |
|   | 15  |  |                                  |   |             |  |   |
|   | 10-   |  |                                  |   |             |  |   |
|   | 5   |  |                                  |   |             |  |   |
|   |   | 23   |                                  | 24  |             |  |   |
|   | May11/23  | 0ct2/23                                      |                                  | Jan 10/24   |             |  |   |
|   | ≥<br>Non-ferrous Met  | alc  |                                  | 7   |             |  |   |
|   | <sup>25</sup> T   |  |                                  |   |             |  |   |
|   | copper  |  |                                  |   |             |  |   |
|   | 20 - tin  |  |                                  |   |             |  |   |
|   | 15-   |  |                                  |   |             |  |   |
|   | ш<br>d  |  |                                  |   |             |  |   |
|   | 10+   |  |                                  |   |             |  |   |
|   | 5-  |  |                                  |   |             |  |   |
|   | 0   |  |                                  |   |             |  |   |
|   | ay11/23   | 0ct2/23                                      |                                  | 0/24  |             |  |   |
|   | May1  | Octí   |                                  | Jan 10/24   |             |  |   |
|   | Viscosity @ 100   | °C   |                                  |   | Base Number |  |   |
|   | 14 Abnormal   |  |                                  | 8.0   |             |  |   |
|   | 13  |  |                                  |   |             |  |   |
|   |   |  |                                  | KOH/  |             |  |   |
|   | 30 12 - Base<br>00 12 - 3 | 1  |                                  | (6,6,1,<br>5,1,<br>, 1,4,0,<br>, 1,4,<br>, 1,4,4,<br>, 1,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4, | í.          |  |   |
|   | ਲੁੱ 11-   |  |                                  | quant 3   | í .         |  |   |
|   |   |  |                                  | 2 0.1   | í           |  |   |
|   | 10  |  |                                  | 1.0   | 1           |  |   |
|   | 10<br>Abnormal  |  |                                  |   |             |  |   |
|   | Abnormal  |  |                                  |   | )           |  |   |
|   | 9 - Abnormal  | 2/23   |                                  |   |             | 2/23                                       | * C/U                                       |
|   | Abnormal  | 0ct2/23                                      |                                  | Jan 10/24   | May11/23    | 0ct2/23 +                                  | 4<br>6<br>9<br>9                            |
| Laboratorv  | Abnormal<br>9<br>8<br>2011<br>1<br>1<br>2011<br>1<br>2011<br>1<br>2011<br>1<br>2011<br>201  |  | son Ave Ca                       | Jan 10/24   | May11/23    |  |   |
| mple No.  | : WearCheck USA -<br>: PCA0111015   | 501 Madia                                    | d :18.                           | ry, NC 2751:<br>lan 2024  | May11/23    | ice - Shop 1071 - Sı                       | ipermarket-Dayto                            |
| mple No.<br>b Number  | : WearCheck USA -<br>: PCA0111015<br>: 06064147   | - 501 Madia<br>Recieved<br>Diagnos           | d :18.<br>ed :19.                | ry, NC 2751:<br>lan 2024<br>lan 2024  | May11/23    | ice - Shop 1071 - Sı                       | permarket-Dayto<br>A Tower Roa<br>Dayton, N |
| mple No.<br>b Number<br>que Number                                      | : WearCheck USA -<br>: PCA0111015<br>: 06064147<br>- : 10835529   | 501 Madia                                    | d :18.<br>ed :19.                | ry, NC 2751:<br>lan 2024  | May11/23    | <b>ice - Shop 1071 - Si</b><br>60          | A Tower Roa<br>Dayton, N<br>US 0881         |
| Laboratory<br>Sample No.<br>Lab Number<br>Jnique Number<br>Test Package | : WearCheck USA -<br>: PCA0111015<br>: 06064147<br>- : 10835529   | 501 Madia<br>Recieved<br>Diagnos<br>Diagnost | d :18.<br>ed :19.<br>tician :Wes | ry, NC 27513<br>lan 2024<br>lan 2024<br>s Davis   | May11/23    | <b>ice - Shop 1071 - Si</b><br>60<br>Conta | permarket-Dayto<br>A Tower Roa<br>Dayton, N |