

## **OIL ANALYSIS REPORT**

Sample Rating Trend **FUEL** 

Machine Id

# **FREIGHTLINER 31**

Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (13 L

### DIAGNOSIS

#### Recommendation

The oil change at the time of sampling has been noted. Resample at the next service interval to monitor. No other corrective action is recommended at this time.

#### Wear

All component wear rates are normal.

### Contamination

Light fuel dilution occurring. No other contaminants were detected in the oil.

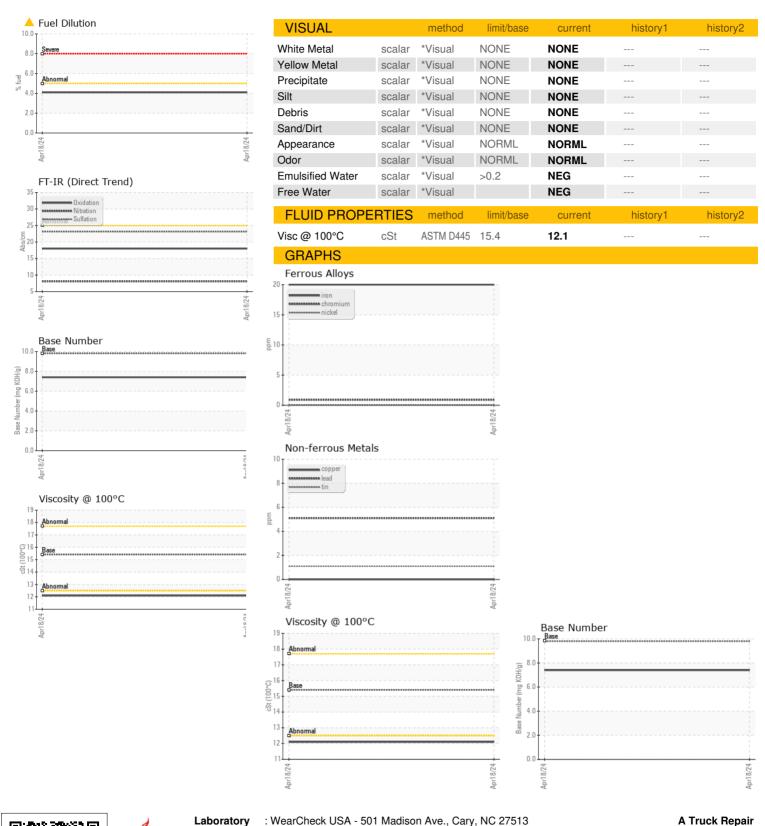
#### **Fluid Condition**

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

| .TR)   |  |  |  | Apr2024   |                              |                              |
|--|--|--|--|---|------------------------------|------------------------------|
| SAMPLE INFORI  | MATION   | method   | limit/base   | current   | history1                     | history2                     |
| Sample Number  |  | Client Info  |  | PCA0115406  |                              |                              |
| Sample Date  |  | Client Info  |  | 18 Apr 2024   |                              |                              |
| Machine Age  | mls  | Client Info  |  | 662450  |                              |                              |
| Oil Age  | mls  | Client Info  |  | 25000   |                              |                              |
| Oil Changed  |  | Client Info  |  | Changed   |                              |                              |
| Sample Status  |  |  |  | MARGINAL  |                              |                              |
| CONTAMINAT   | ION  | method   | limit/base   | current   | history1                     | history2                     |
| Water  |  | WC Method  | >0.2   | NEG   |                              |                              |
| Glycol   |  | WC Method  |  | NEG   |                              |                              |
| WEAR METAL   | S  | method   | limit/base   | current   | history1                     | history2                     |
| Iron   | ppm  | ASTM D5185m  | >80  | 20  |                              |                              |
| Chromium   | ppm  | ASTM D5185m  | >5   | <1  |                              |                              |
| Nickel   | ppm  | ASTM D5185m  | >2   | 0   |                              |                              |
| Titanium   | ppm  | ASTM D5185m  |  | 0   |                              |                              |
| Silver   | ppm  | ASTM D5185m  | >3   | 0   |                              |                              |
| Aluminum   | ppm  | ASTM D5185m  | >30  | 1   |                              |                              |
| Lead   | ppm  | ASTM D5185m  | >30  | 5   |                              |                              |
| Copper   | ppm  | ASTM D5185m  | >150   | 0   |                              |                              |
| Tin  | ppm  | ASTM D5185m  | >5   | 1   |                              |                              |
| Vanadium   | ppm  | ASTM D5185m  |  | 0   |                              |                              |
| Cadmium  | ppm  | ASTM D5185m  |  | 0   |                              |                              |
|  |  |  |  |   |                              |                              |
| ADDITIVES  |  | method   | limit/base   | current   | history1                     | history2                     |
| ADDITIVES Boron  | ppm  | method<br>ASTM D5185m  | limit/base   | current<br>2  | history1                     | history2                     |
|  | ppm  |  | 0  |   |                              |                              |
| Boron<br>Barium  | ppm  | ASTM D5185m  | 0  | 2   |                              |                              |
| Boron  | •                            | ASTM D5185m<br>ASTM D5185m   | 0<br>0<br>60   | 2<br>0  |                              |                              |
| Boron<br>Barium<br>Molybdenum<br>Manganese   | ppm<br>ppm   | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | 0<br>0<br>60   | 2<br>0<br>65  |                              |                              |
| Boron<br>Barium<br>Molybdenum  | ppm<br>ppm   | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | 0<br>0<br>60   | 2<br>0<br>65<br><1  |                              |                              |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium  | ppm<br>ppm<br>ppm<br>ppm   | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | 0<br>0<br>60<br>0<br>1010  | 2<br>0<br>65<br><1<br>965   |                              |                              |
| Boron Barium Molybdenum Manganese Magnesium Calcium  | ppm<br>ppm<br>ppm  | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | 0<br>0<br>60<br>0<br>1010<br>1070  | 2<br>0<br>65<br><1<br>965<br>1077   |                              |                              |
| Boron Barium Molybdenum Manganese Magnesium Calcium 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<br>ASTM D5185m  | 0<br>0<br>60<br>0<br>1010<br>1070<br>1150  | 2<br>0<br>65<br><1<br>965<br>1077<br>1079   |                              |                              |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus 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<br>ASTM D5185m   | 0<br>0<br>60<br>0<br>1010<br>1070<br>1150  | 2<br>0<br>65<br><1<br>965<br>1077<br>1079   |                              |                              |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc 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<br>ASTM D5185m  | 0<br>0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060  | 2<br>0<br>65<br><1<br>965<br>1077<br>1079<br>1270<br>3512   |                              |                              |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm               | ASTM D5185m  | 0<br>0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060  | 2<br>0<br>65<br><1<br>965<br>1077<br>1079<br>1270<br>3512<br>current  | <br><br><br><br><br>history1 | <br><br><br><br><br>history2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm        | ASTM D5185m  | 0<br>0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060  | 2<br>0<br>65<br><1<br>965<br>1077<br>1079<br>1270<br>3512<br>current  | <br><br><br><br><br>history1 | <br><br><br><br><br>history2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium   | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185m  | 0<br>0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>limit/base  | 2<br>0<br>65<br><1<br>965<br>1077<br>1079<br>1270<br>3512<br>current<br>7   |                              | history2                     |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium   | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185m  | 0<br>0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>limit/base<br>>20   | 2<br>0<br>65<br><1<br>965<br>1077<br>1079<br>1270<br>3512<br>current<br>7<br>2<br>0   |                              | history2                     |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel                                      | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185m            | 0<br>0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>limit/base<br>>20<br>>5   | 2 0 65 <1 965 1077 1079 1270 3512  current 7 2 0 4.1  |                              | history2                     |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED                            | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185m                        | 0<br>0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>limit/base<br>>20<br>>5<br>limit/base                                 | 2<br>0<br>65<br><1<br>965<br>1077<br>1079<br>1270<br>3512<br>current<br>7<br>2<br>0<br>▲ 4.1<br>current<br>1.7                |                              | history2 history2            |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %                     | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185m  method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D7844 *ASTM D7844                 | 0<br>0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>limit/base<br>>20<br>>5<br>limit/base                                 | 2<br>0<br>65<br><1<br>965<br>1077<br>1079<br>1270<br>3512<br>current<br>7<br>2<br>0<br>▲ 4.1                                  |                              | history2 history2            |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration           | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7624 | 0<br>0<br>60<br>0<br>1010<br>1150<br>1270<br>2060<br>limit/base<br>>20<br>>5<br>limit/base   | 2 0 65 <1 965 1077 1079 1270 3512  current 7 2 0 4.1  current 1.7 8.1   | history1 history1            | history2 history2            |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7624 | 0<br>0<br>60<br>0<br>1010<br>1070<br>1150<br>1270<br>2060<br>limit/base<br>>20<br>>5<br>limit/base<br>>3<br>>20<br>>3<br>>20<br>>3 | 2<br>0<br>65<br><1<br>965<br>1077<br>1079<br>1270<br>3512<br>current<br>7<br>2<br>0<br>▲ 4.1<br>current<br>1.7<br>8.1<br>23.1 |                              | history2 history2            |



## **OIL ANALYSIS REPORT**





Certificate 12367

Sample No.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513

Lab Number : 06157363 Unique Number : 10992786

: PCA0115406

Received **Tested** Diagnosed

: 25 Apr 2024 : 25 Apr 2024 - Wes Davis

: 23 Apr 2024

Test Package: FLEET (Additional Tests: FuelDilution, PercentFuel)

To discuss this sample report, contact Customer Service at 1-800-237-1369.

 $^st$  - 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)

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