

## **OIL ANALYSIS REPORT**

Sample Rating Trend



# 20-185 (S/N 5KKMALDRNPNM0710)

Diesel Engine Fluid NOT GIVEN (--- GAL)

### DIAGNOSIS

#### Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.

#### Wear

Metal levels are typical for a new component breaking in.

#### Contamination

Fuel content negligible. There is no indication of any contamination in the oil.

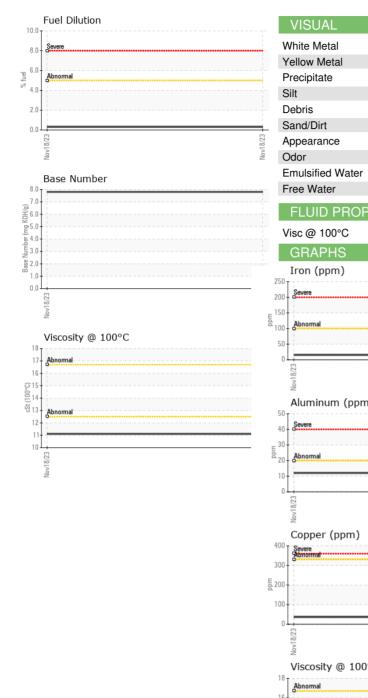
#### Fluid Condition

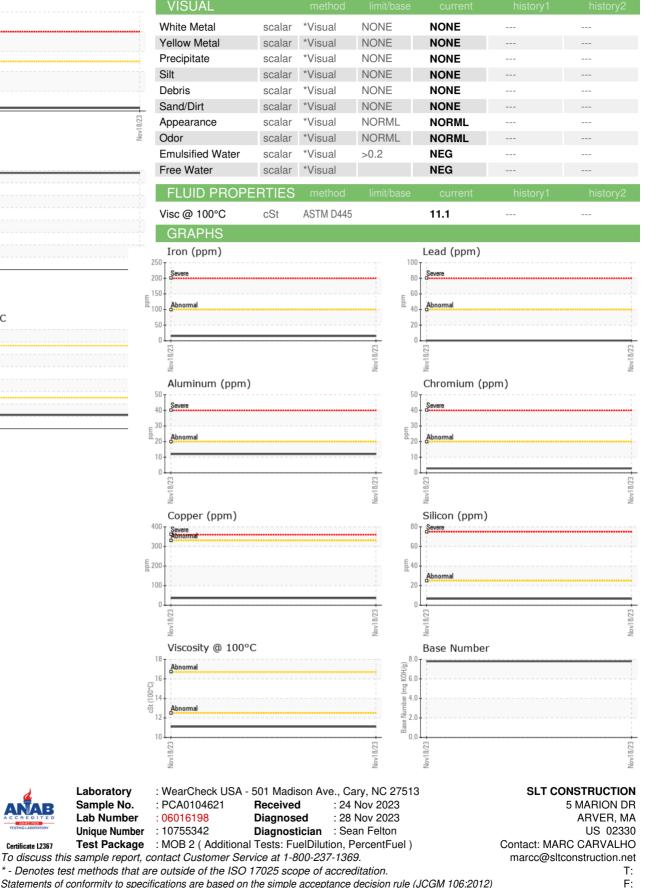
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

|  |   |  |   | Nov2023   |   |  |
|--|---|--|---|---|---|--|
| SAMPLE INFOR   | ΜΑΤΙΟΝ  | method   | limit/base  | current   | history1  | history2   |
|  |   |  |   | PCA0104621  |   |  |
| Sample Number  |   | Client Info  |   |   |   |  |
| Sample Date  | uele  |  |   | 18 Nov 2023   |   |  |
| Machine Age  | mls   | Client Info  |   | 67510   |   |  |
| Oil Age  | mls   | Client Info<br>Client Info   |   | 10000<br>N/A  |   |  |
| Oil Changed<br>Sample Status   |   | Client into  |   | NORMAL  |   |  |
|  |   |  |   | -   |   |  |
| 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  | >100  | 15  |   |  |
| Chromium   | ppm   | ASTM D5185m  | >20   | 3   |   |  |
| Nickel   | ppm   | ASTM D5185m  | >4  | <1  |   |  |
| Titanium   | ppm   | ASTM D5185m  |   | <1  |   |  |
| Silver   | ppm   | ASTM D5185m  | >3  | 0   |   |  |
| Aluminum   | ppm   | ASTM D5185m  | >20   | 12  |   |  |
| Lead   | ppm   | ASTM D5185m  | >40   | <1  |   |  |
| Copper   | ppm   | ASTM D5185m  | >330  | 36  |   |  |
| Tin  | ppm   | ASTM D5185m  | >15   | 2   |   |  |
| Vanadium   | ppm   | ASTM D5185m  |   | <1  |   |  |
| Cadmium  | nom   |  |   | _   |   |  |
| Caumum   | ppm   | ASTM D5185m  |   | 0   |   |  |
| ADDITIVES  | ррш   | method   | limit/base  | current   | <br>history1  | history2   |
| ADDITIVES  | ppm   |  | limit/base  |   |   |  |
| ADDITIVES<br>Boron   |   | method   | limit/base  | current   | history1  | history2   |
| ADDITIVES<br>Boron<br>Barium   | ppm   | method<br>ASTM D5185m  | limit/base  | current<br>4  | history1  | history2   |
| ADDITIVES<br>Boron<br>Barium   | ppm<br>ppm  | method<br>ASTM D5185m<br>ASTM D5185m   | limit/base  | current<br>4<br>0   | history1<br>  | history2<br>   |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese  | ppm<br>ppm<br>ppm   | method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | limit/base  | current<br>4<br>0<br>61   | history1<br><br>  | history2<br><br>   |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese  | ppm<br>ppm<br>ppm<br>ppm  | method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | limit/base  | current<br>4<br>0<br>61<br><1   | history1<br><br><br>  | history2<br><br><br>   |
| 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<br>ASTM D5185m  | limit/base  | current<br>4<br>0<br>61<br><1<br>884  | history1<br><br><br>  | history2<br><br><br>   |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus  | ppm<br>ppm<br>ppm<br>ppm<br>ppm   | methodASTM D5185mASTM D5185mASTM D5185mASTM D5185mASTM D5185mASTM D5185m   | limit/base  | current           4           0           61           <1           884           1267  | history1  | history2<br><br><br><br><br>                                   |
| 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   | limit/base  | Current<br>4<br>0<br>61<br><1<br>884<br>1267<br>1048  | history1  | history2   |
| 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                             | method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | limit/base  | current           4           0           61           <1           884           1267           1048           1245  | history1  | history2   |
| 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                             | 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   | limit/base  | Current<br>4<br>0<br>61<br><1<br>884<br>1267<br>1048<br>1245<br>2363  | history1  | history2   |
| 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                      | 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<br>ASTM D5185m  | limit/base  | current           4           0           61           <1           884           1267           1048           1245           2363           current   | history1  | 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                      | 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<br>ASTM D5185m<br>ASTM D5185m   | limit/base  | current           4           0           61           <1           884           1267           1048           1245           2363           current           7   | history1 history1   | history2 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   | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm               | method           ASTM D5185m   | limit/base<br>>25<br>>20                                  | current           4           0           61           <1           884           1267           1048           1245           2363           current           7           3   | history1  | 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  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm        | method           ASTM D5185m   | limit/base<br>>25<br>>20                                  | current           4           0           61           <1           884           1267           1048           1245           2363           current           7           3           32                            | history1  | 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>Fuel<br>INFRA-RED                                     | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>trs        | method           ASTM D5185m   | limit/base<br>>25<br>>20<br>>5<br>limit/base              | current         4         0         61         <1         884         1267         1048         1245         2363         current         7         3         32         0.3         current                          | history1 history1 history1  | history2 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>Fuel  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm        | method           ASTM D5185m   | limit/base<br>>25<br>>20<br>>5<br>limit/base<br>>3        | current         4         0         61         <1         884         1267         1048         1245         2363         current         7         3         32         0.3  | history1 history1 history1 history1 history1  | history2 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>Fuel<br>INFRA-RED<br>Soot %                           | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br><b>T</b> S | method           ASTM D5185m   | limit/base<br>>25<br>>20<br>>5<br>limit/base              | current         4         0         61         <1         884         1267         1048         1245         2363         current         7         3         32         0.3         current                          | history1                     history1  history1            history1                           | history2 history2 history2 history2 history2 history2 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>Fuel<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        | method           ASTM D5185m           ASTM D5185m | limit/base<br>>25<br>>20<br>>5<br>limit/base<br>>3<br>>20 | current         4         0         61         <1         884         1267         1048         1245         2363         current         7         3         32         0.3         current         0.3         7.8  | history1   history1 <td>history2 history2 history2 history2 history2</td> | history2 history2 history2 history2 history2                   |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAI  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm        | method         ASTM D5185m         ASTM D7844         *ASTM D7415         method       | limit/base >25 >20 >20 >3 limit/base                      | current         4         0         61         <1         884         1267         1048         1245         2363         current         7         3         32         0.3         7.8         19.0         current | history1   history1               history1  | 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>Fuel<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        | method           ASTM D5185m           ASTM D5185m | limit/base >25 >20 >20 >5 limit/base >3 >20 >3 >20 >3     | current         4         0         61         <1         884         1267         1048         1245         2363         current         7         3         0.3         7.8         19.0                            | history1  history1            history1            history1            history1  | history2   |



# **OIL ANALYSIS REPORT**





Certificate L2367

Laboratory

Sample No.

Lab Number