

# **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id 531512 [] Component Diesel Engine Fluid PFJ 10W30 (--- QTS)

# DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor. Please specify the component make and model with your next sample.

## Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

#### Fluid Condition

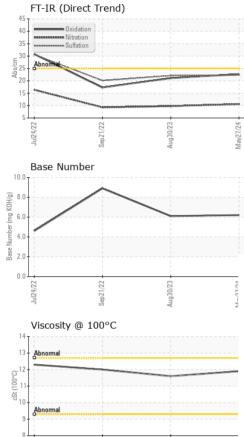
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| SAMPLE INFOR   | MATION   | method   | limit/base  | current  | history1   | history2  |
|--|--|--|---|--|--|---|
| Sample Number  |  | Client Info  |   | PCA0101200   | PCA0101253   | PCA0067730  |
| Sample Date  |  | Client Info  |   | 27 May 2024  | 30 Aug 2023  | 21 Sep 2022   |
| Machine Age  | hrs  | Client Info  |   | 0  | 7541   | 4320  |
| Oil Age  | hrs  | Client Info  |   | 0  | 3000   | 4320  |
| Oil Changed  |  | Client Info  |   | Changed  | Changed  | Changed   |
| 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  | . 0.1   | NEG  | NEG  | NEG   |
| WEAR METAL   | \$   | method   | limit/base  | current  | history1   | history2  |
|  |  |  |   |  |  |   |
| Iron   | ppm  | ASTM D5185m  | >100  | 13   | 12   | 7   |
| Chromium   | ppm  | ASTM D5185m  | >20   | <1   | 0  | <1  |
| Nickel   | ppm  | ASTM D5185m  | >4  | <1   | 0  | 0   |
| Titanium   | ppm  | ASTM D5185m  | 0   | <1   | 0  | <1  |
| Silver   | ppm  | ASTM D5185m  | >3  | <1   | 0  | <1  |
| Aluminum   | ppm  | ASTM D5185m  | >20   | 3  | 3  | 2   |
| Lead   | ppm  | ASTM D5185m  | >40   | 0  | 0  | <1  |
| Copper   | ppm  | ASTM D5185m  |   | 2  | <1   | 4   |
| Tin  | ppm  | ASTM D5185m  | >15   | 0  | 0  | <1  |
| Vanadium   | ppm  | ASTM D5185m  |   | <1<br>0  | 0  | 1   |
| Cadmium  | ppm  | ASTM D5185m  |   |  |  | 0   |
|  | PPIII  |  |   | U  | 0  | 0   |
| ADDITIVES  | PPIII  | method   | limit/base  | current  | history1   | history2  |
|  | ppm  |  | limit/base  | current<br>4   | -  | history2<br>2   |
| ADDITIVES  |  | method   | limit/base  | current  | history1   | history2<br>2<br>0  |
| ADDITIVES<br>Boron   | ppm  | method<br>ASTM D5185m  | limit/base  | current<br>4<br>0<br>67  | history1<br><1<br>0<br>71  | history2<br>2<br>0<br>60  |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese  | ppm<br>ppm   | method<br>ASTM D5185m<br>ASTM D5185m   | limit/base  | current<br>4<br>0  | history1<br><1<br>0<br>71<br>0   | history2<br>2<br>0<br>60<br>1   |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum   | 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>67<br><1<br>1141  | history1<br><1<br>0<br>71<br>0<br>1232   | history2<br>2<br>0<br>60<br>1<br>905  |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium  | ppm<br>ppm<br>ppm<br>ppm   | method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | limit/base  | current           4           0           67           <1           1141           1257  | history1<br><1<br>0<br>71<br>0<br>1232<br>1436   | history2<br>2<br>0<br>60<br>1<br>905<br>1182  |
| ADDITIVES<br>Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus  | 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           4           0           67           <1           1141           1257           1182   | history1<br><1<br>0<br>71<br>0<br>1232<br>1436<br>1236   | history2<br>2<br>0<br>60<br>1<br>905<br>1182<br>1043  |
| 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   | 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           67           <1           1141           1257           1182           1529  | history1<br><1<br>0<br>71<br>0<br>1232<br>1436<br>1236<br>1553   | history2<br>2<br>0<br>60<br>1<br>905<br>1182<br>1043<br>1240  |
| 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   | limit/base  | current           4           0           67           <1           1141           1257           1182   | history1<br><1<br>0<br>71<br>0<br>1232<br>1436<br>1236   | history2<br>2<br>0<br>60<br>1<br>905<br>1182<br>1043  |
| 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  | limit/base  | current           4           0           67           <1           1141           1257           1182           1529  | history1<br><1<br>0<br>71<br>0<br>1232<br>1436<br>1236<br>1553   | history2<br>2<br>0<br>60<br>1<br>905<br>1182<br>1043<br>1240<br>3509<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<br>ppm                     | method           ASTM D5185m   | limit/base  | current           4           0           67           <1           1141           1257           1182           1529           3676           current           4   | history1           <1           0           71           0           1232           1436           1236           1553           3777           history1           6   | history2           2           0           60           1           905           1182           1043           1240           3509           history2           6  |
| 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<br>ASTM D5185m  | limit/base  | current           4           0           67           <1           1141           1257           1182           1529           3676           current   | history1<br><1<br>0<br>71<br>0<br>1232<br>1436<br>1236<br>1553<br>3777<br>history1   | history2<br>2<br>0<br>60<br>1<br>905<br>1182<br>1043<br>1240<br>3509<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<br>ppm                     | method           ASTM D5185m   | limit/base  | current           4           0           67           <1           1141           1257           1182           1529           3676           current           4   | history1           <1           0           71           0           1232           1436           1236           1553           3777           history1           6   | history2           2           0           60           1           905           1182           1043           1240           3509           history2           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   | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm                     | method           ASTM D5185m   | limit/base  | current           4           0           67           <1           1141           1257           1182           1529           3676           current           4           9   | history1           <1           0           71           0           1232           1436           1236           1553           3777           history1           6           9   | history2           2           0           60           1           905           1182           1043           1240           3509           history2           6           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<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   | limit/base<br>>25<br>>20<br>limit/base<br>>3        | current           4           0           67           <1           1141           1257           1182           1529           3676           current           4           9           4           0           current           0.1           | history1         <1         0         71         0         1232         1436         1236         1553         3777         history1         6         9         0         history1         0         history1         0.1                       | history2         2         0         60         1         905         1182         1043         1240         3509         history2         6         7         <1         history2         0.1                          |
| 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<br>INFRA-RED<br>Soot %<br>Nitration              | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br><b>TS</b>                      | method           ASTM D5185m   | limit/base<br>>25<br>>20<br>limit/base<br>>3        | current           4           0           67           <1           1141           1257           1182           1529           3676           current           4           9           4           current           4           9           4 | history1         <1         0         71         0         1232         1436         1236         1553         3777         history1         6         9         0         history1  | history2         2         0         60         1         905         1182         1043         1240         3509         history2         6         7         <1         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><b>TS</b><br>ppm<br>ppm | method           ASTM D5185m   | limit/base<br>>25<br>>20<br>limit/base<br>>3        | current           4           0           67           <1           1141           1257           1182           1529           3676           current           4           9           4           0           current           0.1           | history1         <1         0         71         0         1232         1436         1236         1553         3777         history1         6         9         0         history1         0         history1         0.1                       | history2         2         0         60         1         905         1182         1043         1240         3509         history2         6         7         <1         history2         0.1                          |
| 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<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   | limit/base<br>>25<br>>20<br>limit/base<br>>3<br>>20 | current           4           0           67           <1           1141           1257           1182           1529           3676           current           4           9           4           9           4           0.1           10.6  | history1         <1         0         71         0         1232         1436         1235         3777         history1         6         9         0         history1         0         0         0         0         9         0.1         9.8 | history2         2         0         60         1         905         1182         1043         1240         3509         history2         6         7         <1         history2         0.1         9.3              |
| 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<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 limit/base >3 >20 >30            | current           4           0           67           <1           1141           1257           1182           1529           3676           current           4           9           4           0.1           10.6           22.3           | history1         <1         0         71         0         1232         1436         1236         1553         3777         history1         6         9         0         history1         0.1         9.8         22.1                         | history2         2         0         60         1         905         1182         1043         1240         3509         history2         6         7         <1         history2         0.1         9.3         20.1 |



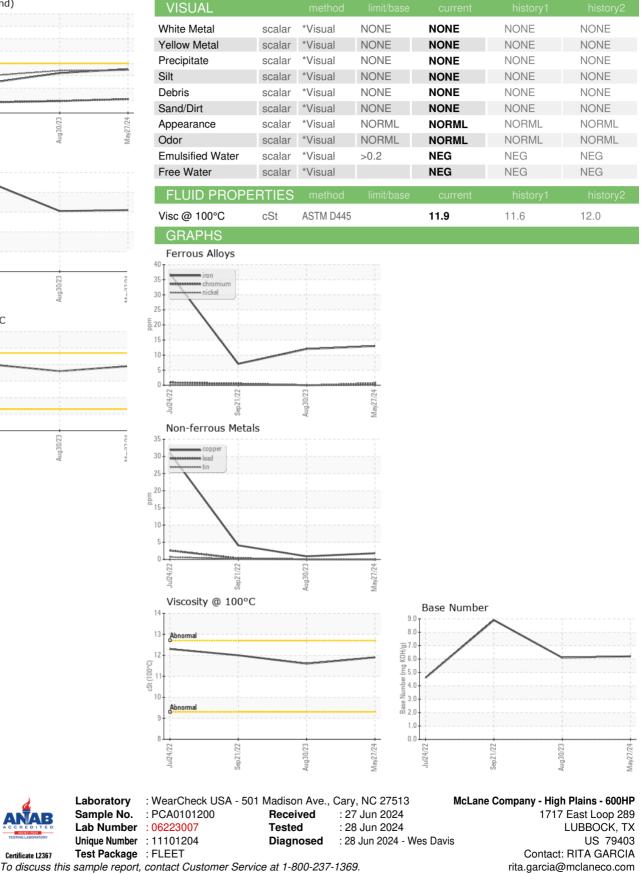
Jul24/22

# **OIL ANALYSIS REPORT**



Sep21/22

ug30/23



\* - 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)

Report Id: MCLLUB [WUSCAR] 06223007 (Generated: 06/28/2024 15:40:19) Rev: 1

Certificate 12367

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