

## **OIL ANALYSIS REPORT**

#### Sample Rating Trend





## Component Diesel Engine

## PURUS 10W30 BLEND (--- 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.

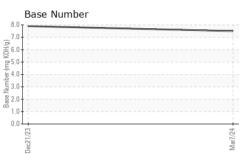
### Fluid Condition

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

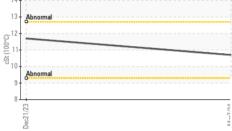
| SAMPLE INFORM   | IATION   | method   | limit/base  | current  | history1  | history2   |
|---|--|--|---|--|---|--|
| Sample Number   |  | Client Info  |   | WC0859061  | WC0859021   |  |
| Sample Date   |  | Client Info  |   | 07 Mar 2024  | 21 Dec 2023   |  |
| Machine Age   | mls  | Client Info  |   | 804575   | 785000  |  |
| Oil Age   | mls  | Client Info  |   | 20000  | 30000   |  |
| Oil Changed   | 11113  | Client Info  |   | Changed  | Changed   |  |
| Sample Status   |  |  |   | NORMAL   | NORMAL  |  |
| •   |  |  | 11 1.0  | -  | -   |  |
| CONTAMINATION   | N  | method   | limit/base  | current  | history1  | history2   |
| Fuel  |  | WC Method  | >5  | <1.0   | <1.0  |  |
| Water   |  | WC Method  | >0.2  | NEG  | NEG   |  |
| Glycol  |  | WC Method  |   | NEG  | NEG   |  |
| WEAR METALS   |  | method   | limit/base  | current  | history1  | history2   |
| Iron  | ppm  | ASTM D5185m  | >100  | 16   | 49  |  |
| Chromium  | ppm  | ASTM D5185m  | >20   | 1  | 2   |  |
| Nickel  | ppm  | ASTM D5185m  | >4  | <1   | 0   |  |
| Titanium  | ppm  | ASTM D5185m  |   | <1   | <1  |  |
| Silver  | ppm  | ASTM D5185m  | >3  | 0  | 0   |  |
| Aluminum  | ppm  | ASTM D5185m  | >20   | 4  | 11  |  |
| Lead  | ppm  | ASTM D5185m  | >40   | 3  | 12  |  |
| Copper  | ppm  | ASTM D5185m  | >330  | 1  | 4   |  |
| Tin   | ppm  | ASTM D5185m  | >15   | 1  | <1  |  |
| Vanadium  | ppm  | ASTM D5185m  |   | <1   | 0   |  |
| Cadmium   | ppm  | ASTM D5185m  |   | 0  | 0   |  |
|   | 1-1-   |  |   | U  | 0   |  |
| ADDITIVES   | 1- 1-  | method   | limit/base  | current  | history1  | history2   |
| ADDITIVES<br>Boron  | ppm  |  | limit/base  | -  | -   | history2   |
|   |  | method   | limit/base  | current  | history1  |  |
| Boron   | ppm  | method<br>ASTM D5185m  | limit/base  | current<br>22  | history1<br>16  |  |
| Boron<br>Barium   | ppm<br>ppm   | method<br>ASTM D5185m<br>ASTM D5185m   | limit/base  | current<br>22<br>0   | history1<br>16<br>0   |  |
| Boron<br>Barium<br>Molybdenum   | ppm<br>ppm<br>ppm  | method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | limit/base  | current<br>22<br>0<br>68   | history1<br>16<br>0<br>83   |  |
| Boron<br>Barium<br>Molybdenum<br>Manganese  | ppm<br>ppm<br>ppm  | method<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | limit/base  | current<br>22<br>0<br>68<br><1   | history1<br>16<br>0<br>83<br><1   |  |
| 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  | limit/base  | current<br>22<br>0<br>68<br><1<br>957  | history1<br>16<br>0<br>83<br><1<br>1132   |  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium  | 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  | limit/base  | Current<br>22<br>0<br>68<br><1<br>957<br>1167  | history1<br>16<br>0<br>83<br><1<br>1132<br>1289   | <br><br><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<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>22<br>0<br>68<br><1<br>957<br>1167<br>1081  | history1<br>16<br>0<br>83<br><1<br>1132<br>1289<br>1244   |  |
| 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<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           22           0           68           <1           957           1167           1081           1293  | history1 16 0 83 <1 1132 1289 1244 1441   |  |
| 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<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  |   | Current<br>22<br>0<br>68<br><1<br>957<br>1167<br>1081<br>1293<br>3880  | history1 16 0 83 <1 1132 1289 1244 1441 3575  |  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS  | 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           22           0           68           <1           957           1167           1081           1293           3880           current   | history1           16           0           83           <1           1132           1289           1244           1441           3575           history1   | <br><br><br><br><br>history2   |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon   | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm        | method           ASTM D5185m   | limit/base  | current           22           0           68           <1           957           1167           1081           1293           3880           current           9   | history1           16           0           83           <1           1132           1289           1244           1441           3575           history1           15  | <br><br><br><br><br>history2   |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<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  | current           22           0           68           <1           957           1167           1081           1293           3880           current           9           3   | history1           16           0           83           <1           1132           1289           1244           1441           3575           history1           15           <1   | <br><br><br><br><br>history2   |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium  | 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           22           0           68           <1           957           1167           1081           1293           3880           current           9           3           1   | history1           16           0           83           <1           1132           1289           1244           1441           3575           history1           15           <1           2   | <br><br><br><br><br><br>history2   |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<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        | method           ASTM D5185m   | limit/base<br>>25<br>>20<br>limit/base<br>>3            | current           22           0           68           <1           957           1167           1081           1293           3880           current           9           3           1           current   | history1         16         0         83         <1         1132         1289         1244         1441         3575         history1         15         <1         2         history1  | <br><br><br><br><br>history2<br><br><br><br>history2                         |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium<br>INFRA-RED<br>Soot %                           | ppm                            | method         ASTM D5185m   | limit/base<br>>25<br>>20<br>limit/base<br>>3            | current           22           0           68           <1           957           1167           1081           1293           3880           current           9           3           1           current           0.4                               | history1           16           0           83           <1           1132           1289           1244           1441           3575           history1           15           <1           2           history1           0.7                | <br><br><br><br><br>history2<br><br><br>history2                             |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<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           22           0           68           <1           957           1167           1081           1293           3880           current           9           3           1           current           0.4           10.7                | history1           16           0           83           <1           1132           1289           1244           1441           3575           history1           15           <1           2           history1           0.7           13.5 | <br><br><br><br><br>history2<br><br><br>history2                             |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<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 D7844         *ASTM D7624         *ASTM D7415         method   | limit/base >25 >20 limit/base >3 >20 >30 >30 limit/base | current           22           0           68           <1           957           1167           1081           1293           3880           current           9           3           1           current           0.4           10.7           21.4 | history1         16         0         83         <1         1132         1289         1244         1441         3575         history1         15         <1         2         history1         0.7         13.5         25.3         history1   | <br><br><br><br>history2<br><br><br>history2                                 |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<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 | Imit/base >25 >20 Imit/base >20 >3 >20 >30              | current           22           0           68           <1           957           1167           1081           1293           3880           current           9           3           1           current           0.4           10.7           21.4 | history1         16         0         83         <1         1132         1289         1244         1441         3575         history1         15         <1         2         history1         0.7         13.5         25.3                    | <br><br><br><br><br>history2<br><br>history2<br><br>history2<br><br>history2 |



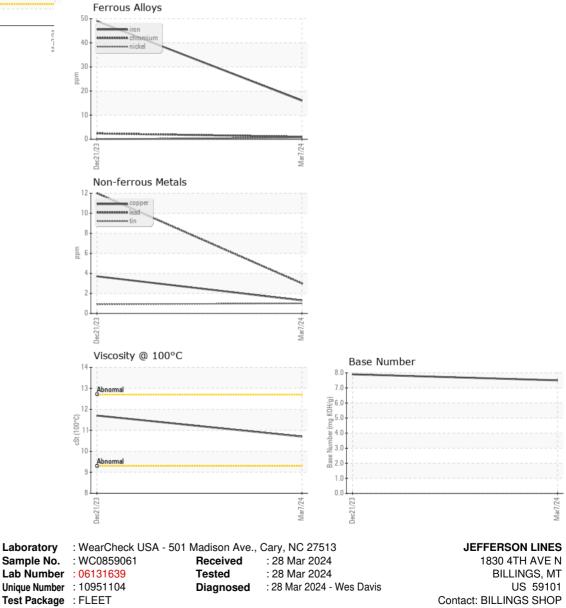
# **OIL ANALYSIS REPORT**







| VISUAL           |        | method    |            |         |          | history2 |
|------------------|--------|-----------|------------|---------|----------|----------|
| White Metal      | scalar | *Visual   | NONE       | NONE    | NONE     |          |
| Yellow Metal     | scalar | *Visual   | NONE       | NONE    | NONE     |          |
| Precipitate      | scalar | *Visual   | NONE       | NONE    | NONE     |          |
| Silt             | scalar | *Visual   | NONE       | NONE    | NONE     |          |
| Debris           | scalar | *Visual   | NONE       | NONE    | NONE     |          |
| Sand/Dirt        | scalar | *Visual   | NONE       | NONE    | NONE     |          |
| Appearance       | scalar | *Visual   | NORML      | NORML   | NORML    |          |
| Odor             | scalar | *Visual   | NORML      | NORML   | NORML    |          |
| Emulsified Water | scalar | *Visual   | >0.2       | NEG     | NEG      |          |
| Free Water       | scalar | *Visual   |            | NEG     | NEG      |          |
| FLUID PROPER     | TIES   | method    | limit/base | current | history1 | history2 |
| Visc @ 100°C     | cSt    | ASTM D445 |            | 10.7    | 11.7     |          |
| GRAPHS           |        |           |            |         |          |          |



Test Package : FLEET Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369. billingsshop@jeffersonlines.com \* - 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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