

# **OIL ANALYSIS REPORT**

Sample Rating Trend







Machine Id 4314228 Component

Diesel Engine Fluid {not provided} (--- GAL)

#### DIAGNOSIS

# Recommendation

Resample at the next service interval to monitor.

# Wear

Metal levels are typical for a new component breaking in.

# Contamination

There is no indication of any contamination in the oil.

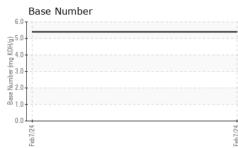
## Fluid Condition

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

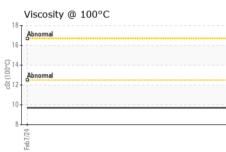
| SAMPLE INFORM   | IATION  | method   | limit/base  | current   | history1   | history2   |
|---|---|--|---|---|--|--|
| Sample Number   |   | Client Info  |   | IL06099972  |  |  |
| Sample Date   |   | Client Info  |   | 07 Feb 2024   |  |  |
| Machine Age   | mls   | Client Info  |   | 793   |  |  |
| Oil Age   | mls   | Client Info  |   | 793   |  |  |
| Oil Changed   |   | Client Info  |   | N/A   |  |  |
| Sample Status   |   |  |   | NORMAL  |  |  |
| CONTAMINATION   | ١   | method   | limit/base  | current   | history1   | history2   |
| Water   |   | WC Method  | >0.2  | NEG   |  |  |
| Glycol  |   | WC Method  |   | NEG   |  |  |
| WEAR METALS   |   | method   | limit/base  | current   | history1   | history2   |
| Iron  | ppm   | ASTM D5185m  | >100  | 42  |  |  |
| Chromium  | ppm   | ASTM D5185m  | >20   | <1  |  |  |
| Nickel  | ppm   | ASTM D5185m  | >4  | 0   |  |  |
| Titanium  | ppm   | ASTM D5185m  |   | 0   |  |  |
| Silver  | ppm   | ASTM D5185m  | >3  | ۲<br>ج1   |  |  |
| Aluminum  | ppm   | ASTM D5185m  | >20   | 7   |  |  |
| Lead  | ppm   | ASTM D5185m  | >40   | 0   |  |  |
| Copper  | ppm   | ASTM D5185m  | >330  | 47  |  |  |
| Tin   | ppm   | ASTM D5185m  | >15   | <1  |  |  |
| Vanadium  | ppm   | ASTM D5185m  | 10  | 0   |  |  |
| Cadmium   | ppm   | ASTM D5185m  |   | 0   |  |  |
| ADDITIVES   |   | method   | limit/base  | current   | history1   | history2   |
|   |   |  | iiiiii/base   |   |  |  |
| Boron   | ppm   | ASTM D5185m  |   | 223   |  |  |
| Barium  | ppm   | ASTM D5185m  |   | 15<br>6   |  |  |
|   |   |  |   | n   |  |  |
| Molybdenum  | ppm   | ASTM D5185m  |   |   |  |  |
| Manganese   | ppm   | ASTM D5185m  |   | 1   |  |  |
| Manganese<br>Magnesium  | ppm<br>ppm  | ASTM D5185m<br>ASTM D5185m   |   | 1<br>15   |  |  |
| Manganese<br>Magnesium<br>Calcium   | ppm<br>ppm<br>ppm   | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  |   | 1<br>15<br>862  |  |  |
| Manganese<br>Magnesium<br>Calcium<br>Phosphorus   | ppm<br>ppm<br>ppm<br>ppm  | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   |   | 1<br>15<br>862<br>761   | <br>   | <br><br>   |
| Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc   | ppm<br>ppm<br>ppm<br>ppm<br>ppm   | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  |   | 1<br>15<br>862<br>761<br>831  |  |  |
| Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur   | 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   |   | 1<br>15<br>862<br>761   | <br><br><br>   |  |
| Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc   | 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  | limit/base  | 1<br>15<br>862<br>761<br>831  |  |  |
| Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur   | 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><b>method</b><br>ASTM D5185m  |   | 1<br>15<br>862<br>761<br>831<br>2838  | <br><br><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  | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br><b>method</b><br>ASTM D5185m<br>ASTM D5185m   | >25   | 1<br>15<br>862<br>761<br>831<br>2838<br>current<br>44<br>1  | <br><br><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   | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | >25<br>>20  | 1<br>15<br>862<br>761<br>831<br>2838<br><u>current</u><br>44<br>1<br>5  | <br><br><br><br>history1<br><br>   | <br><br><br>history2<br><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  | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br><b>method</b><br>ASTM D5185m<br>ASTM D5185m   | >25<br>>20  | 1<br>15<br>862<br>761<br>831<br>2838<br>current<br>44<br>1  | <br><br><br><br>history1<br>   | <br><br><br>history2<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   | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | >25<br>>20  | 1<br>15<br>862<br>761<br>831<br>2838<br><u>current</u><br>44<br>1<br>5  | <br><br><br><br>history1<br><br>   | <br><br><br>history2<br><br>   |
| Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<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   | 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   | >25<br>>20<br>>5  | 1<br>15<br>862<br>761<br>831<br>2838<br>current<br>44<br>1<br>5<br>5<br><1.0  | <br><br><br><br>history1<br><br>   | <br><br><br>history2<br><br>   |
| Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium<br>Fuel<br>INFRA-RED<br>Soot %<br>Nitration                               | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>%   | ASTM D5185m<br>ASTM D5185m  | >25<br>>20<br>>5<br>limit/base<br>>3                      | 1<br>15<br>862<br>761<br>831<br>2838<br>current<br>44<br>1<br>5<br><<1.0<br>current                                 | <br><br><br><br>history1<br><br><br><br>history1   | <br><br><br>history2<br><br><br><br>history2                             |
| Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<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>%                                      | ASTM D5185m<br>ASTM D5185m   | >25<br>>20<br>>5<br>limit/base<br>>3                      | 1<br>15<br>862<br>761<br>831<br>2838<br>current<br>44<br>1<br>5<br><1.0<br>current<br>0.1                           | <br><br><br><br>history1<br><br><br><br>history1<br>   | <br><br><br>history2<br><br><br><br>history2                             |
| Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium<br>Fuel<br>INFRA-RED<br>Soot %<br>Nitration                               | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>%<br>%<br>%<br>Abs/.1mm                       | 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 D3524<br><b>method</b><br>*ASTM D7844  | >25<br>>20<br>>5<br>limit/base<br>>3<br>>20               | 1<br>15<br>862<br>761<br>831<br>2838<br><u>current</u><br>44<br>1<br>5<br><1.0<br><u>current</u><br>0.1<br>5.1      | <br><br><br><br>history1<br><br><br><br>history1<br><br>history1   | <br><br><br>history2<br><br><br><br>history2<br><br>history2             |
| Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<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>%<br>%<br>%<br>Abs/.1mm                       | 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 D3524<br>ASTM D3524<br>*ASTM D7844<br>*ASTM D7624  | >25<br>>20<br>>5<br>limit/base<br>>3<br>>20<br>>30        | 1<br>15<br>862<br>761<br>831<br>2838<br>current<br>44<br>1<br>5<br><1.0<br>current<br>0.1<br>5.1<br>18.5            | <br><br><br><br><br>history1<br><br><br>history1<br><br>history1   | <br><br><br>history2<br><br><br><br>history2<br><br>history2             |
| Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium<br>Fuel<br>INFRA-RED<br>Soot %<br>Nitration<br>Sulfation<br>FLUID DEGRADA | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>%<br>%<br>Abs/cm<br>Abs/cm<br>Abs/.1mm | ASTM D5185m<br>ASTM D7624<br>*ASTM D7624<br>*ASTM D7624 | >25<br>>20<br>>5<br><b>limit/base</b><br>>3<br>>20<br>>30 | 1<br>15<br>862<br>761<br>831<br>2838<br>current<br>44<br>1<br>5<br><1.0<br>current<br>0.1<br>5.1<br>18.5<br>current | <ul> <li></li> <li></li> <li></li> <li>history1</li> <li></li> <li></li> <li></li> <li>history1</li> <li></li> <li></li> <li>history1</li> <li></li> <li>history1</li> </ul> | <br><br><br>history2<br><br><br>history2<br><br>history2<br><br>history2 |



# **OIL ANALYSIS REPORT**



|                            |  | method   | limit/base   | current   | history1   | history2   |
|----------------------------|--|--|--|---|--|--|
| White Metal                | scalar   | *Visual  | NONE   | NONE  |  |  |
| Yellow Metal               | scalar   | *Visual  | NONE   | NONE  |  |  |
| Precipitate                | scalar   | *Visual  | NONE   | NONE  |  |  |
| Silt                       | scalar   | *Visual  | NONE   | NONE  |  |  |
| Debris                     | scalar   | *Visual  | NONE   | NONE  |  |  |
| Sand/Dirt                  | scalar   | *Visual  | NONE   | NONE  |  |  |
| Appearance                 | scalar   | *Visual  | NORML  | NORML   |  |  |
| Odor                       | scalar   | *Visual  | NORML  | NORML   |  |  |
| Emulsified Water           | scalar   | *Visual  | >0.2   | NEG   |  |  |
| Free Water                 | scalar   | *Visual  |  | NEG   |  |  |
| FLUID PROPERT              | IES  | method   | limit/base   | current   | history1   | history2   |
| Visc @ 100°C               | cSt  | ASTM D445  |  | 9.7   |  |  |
| GRAPHS                     |  |  |  |   |  |  |
| Ferrous Alloys             |  |  |  |   |  |  |
|                            |  |  |  |   |  |  |
| chromium                   |  |  |  |   |  |  |
| 30                         |  |  |  |   |  |  |
|                            |  |  |  |   |  |  |
| <sup>읍</sup> 20 -          |  |  |  |   |  |  |
| 15                         |  |  |  |   |  |  |
|                            |  |  |  |   |  |  |
| 1                          |  |  |  |   |  |  |
|                            |  |  | 7/24   |   |  |  |
| Feb                        |  |  | Feb  |   |  |  |
| Non-ferrous Metal          | s  |  |  |   |  |  |
| <sup>50</sup>              |  |  |  |   |  |  |
| head assessment load       |  |  |  |   |  |  |
| 40 anneasonatin            |  |  |  |   |  |  |
| 30                         |  |  |  |   |  |  |
|                            |  |  |  |   |  |  |
| 20                         |  |  |  |   |  |  |
| 10-                        |  |  |  |   |  |  |
|                            |  |  |  |   |  |  |
| 54<br>24                   |  |  | 24   |   |  |  |
| Feb7//                     |  |  | Feb7/  |   |  |  |
| Viscosity @ 100°C          |  |  |  |   |  |  |
|                            |  |  |  |   |  |  |
| <sup>18</sup> T            |  |  | 6.0  | Base Number   |  |  |
| 17- Abnormal               |  |  |  |   |  |  |
| 17- Abnormal               |  |  | 5.0  |   |  |  |
| 174 Abnormal<br>164<br>154 |  |  | 5.0  |   |  |  |
| 174 Abnormal<br>164<br>154 |  |  | 5.0  |   |  |  |
| 17 - Abnormal<br>16        |  |  | 5.0  |   |  |  |
| 17 - Abnormal<br>16        |  |  | 5.0  |   |  |  |
| 17 - Abnormal<br>16        |  |  |  |   |  |  |
| 17 - Abnormal<br>16        |  |  | 5.0<br>(6)(HOX) 4.0<br>Buil agumny agum<br>9828<br>820<br>920<br>920<br>920<br>920<br>920<br>920<br>920<br>920<br>920<br>9   |   |  |  |
|                            | Debris<br>Sand/Dirt<br>Appearance<br>Odor<br>Emulsified Water<br>Free Water<br>FLUID PROPERT<br>Visc @ 100°C<br>GRAPHS<br>Ferrous Alloys | Debris scalar<br>Sand/Dirt scalar<br>Appearance scalar<br>Odor scalar<br>Emulsified Water scalar<br>Free Water scalar<br>Free Water scalar<br>FLUID PROPERTIES<br>Visc @ 100°C cSt<br>GRAPHS<br>Ferrous Alloys | Debris scalar *Visual<br>Sand/Dirt scalar *Visual<br>Appearance scalar *Visual<br>Odor scalar *Visual<br>Emulsified Water scalar *Visual<br>Free Water scalar *Visual<br>Free Water scalar *Visual<br>FLUID PROPERTIES method<br>Visc @ 100°C cSt ASTM D445<br>GRAPHS<br>Ferrous Alloys<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5 | Debris scalar *Visual NONE<br>Sand/Dirt scalar *Visual NORML<br>Appearance scalar *Visual NORML<br>Odor scalar *Visual NORML<br>Emulsified Water scalar *Visual >0.2<br>Free Water scalar *Visual >0.2<br>Free Water scalar *Visual<br>FLUID PROPERTIES method limit/base<br>Visc @ 100°C cSt ASTM D445<br>GRAPHS<br>Ferrous Alloys<br>ferrous Alloys<br>formium nickel<br>Non-ferrous Metals | Debris scalar *Visual NONE NONE<br>Sand/Dirt scalar *Visual NONE NONE<br>Appearance scalar *Visual NORML NORML<br>Odor scalar *Visual NORML NORML<br>Emulsified Water scalar *Visual >0.2 NEG<br>Free Water scalar *Visual NORML NEG<br>Free Water scalar *Visual >0.2 NEG<br>FLUID PROPERTIES method limit/base current<br>Visc @ 100°C cSt ASTM D445 9.7<br>GRAPHS<br>Ferrous Alloys | Debris scalar *Visual NONE NONE<br>Sand/Dirt scalar *Visual NONE NONE<br>Appearance scalar *Visual NORML NORML<br>Codor scalar *Visual NORML NORML<br>Emulsified Water scalar *Visual >0.2 NEG<br>Free Water scalar *Visual NEG<br>Free Water scalar *Visual NEG<br>Free Water scalar *Visual NEG<br>FUUID PROPERTIES method limit/base current history1<br>Visc @ 100°C cSt ASTM D445 9.7<br>GRAPHS<br>Ferrous Alloys |





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