



# OIL ANALYSIS REPORT

|                 |                 |
|-----------------|-----------------|
| WEAR            | <b>NORMAL</b>   |
| CONTAMINATION   | <b>ABNORMAL</b> |
| FLUID CONDITION | <b>NORMAL</b>   |

Machine Id  
**JENBACHER E1**  
 Component  
**Biogas Engine**  
 Fluid  
**CONOCO EL MAR LA4 EXD (180 GAL)**

## RECOMMENDATION

No corrective action is recommended at this time. Resample at the next service interval to monitor.

| Test           | UOM | Method      | Limit/Abn | Current            | History1    | History2    |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number  |     | Client Info |           | <b>WC0896453</b>   | WC0896477   | WC0896474   |
| Sample Date    |     | Client Info |           | <b>22 May 2024</b> | 19 Apr 2024 | 09 Apr 2024 |
| Machine Age    | hrs | Client Info |           | <b>26860</b>       | 26449       | 26249       |
| Oil Age        | hrs | Client Info |           | <b>6462</b>        | 6051        | 5851        |
| Filter Age     | hrs | Client Info |           | <b>6462</b>        | 6051        | 5851        |
| Oil Changed    |     | Client Info |           | <b>Not Changd</b>  | Not Changd  | Not Changd  |
| Filter Changed |     | Client Info |           | <b>Not Changd</b>  | Not Changd  | Not Changd  |
| Sample Status  |     |             |           | <b>ABNORMAL</b>    | NORMAL      | NORMAL      |

## WEAR

All component wear rates are normal.

|              |        |             |      |              |      |      |
|--------------|--------|-------------|------|--------------|------|------|
| Iron         | ppm    | ASTM D5185m | >20  | <b>5</b>     | 3    | 4    |
| Chromium     | ppm    | ASTM D5185m | >5   | <b>&lt;1</b> | <1   | <1   |
| Nickel       | ppm    | ASTM D5185m | >2   | <b>0</b>     | 0    | <1   |
| Titanium     | ppm    | ASTM D5185m |      | <b>0</b>     | 0    | 0    |
| Silver       | ppm    | ASTM D5185m | >5   | <b>&lt;1</b> | 0    | 0    |
| Aluminum     | ppm    | ASTM D5185m | >15  | <b>8</b>     | 7    | 6    |
| Lead         | ppm    | ASTM D5185m | >20  | <b>4</b>     | 4    | 2    |
| Copper       | ppm    | ASTM D5185m | >15  | <b>1</b>     | 0    | 1    |
| Tin          | ppm    | ASTM D5185m | >5   | <b>2</b>     | 3    | <1   |
| Vanadium     | ppm    | ASTM D5185m |      | <b>0</b>     | 0    | <1   |
| White Metal  | scalar | *Visual     | NONE | <b>NONE</b>  | NONE | NONE |
| Yellow Metal | scalar | *Visual     | NONE | <b>NONE</b>  | NONE | NONE |

## CONTAMINATION

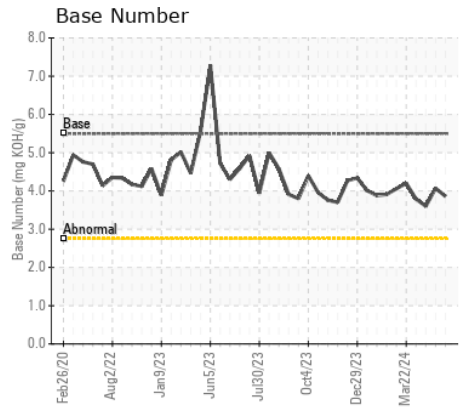
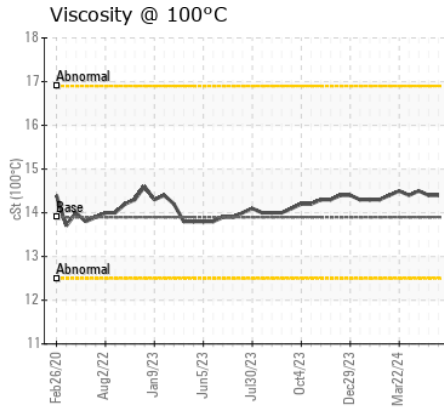
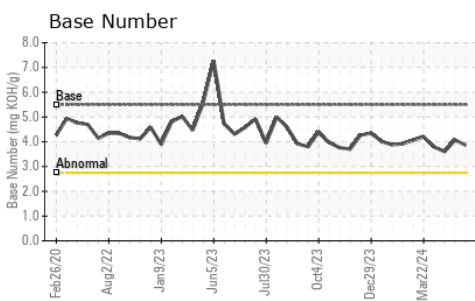
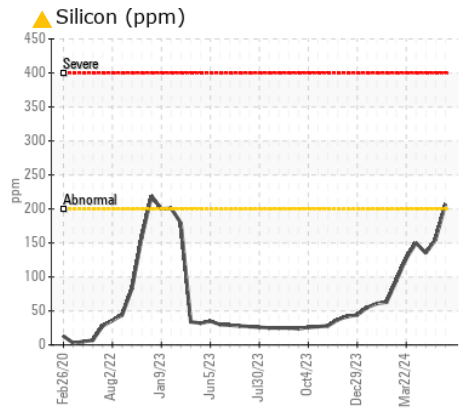
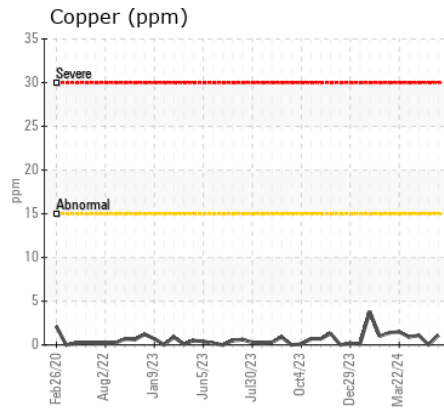
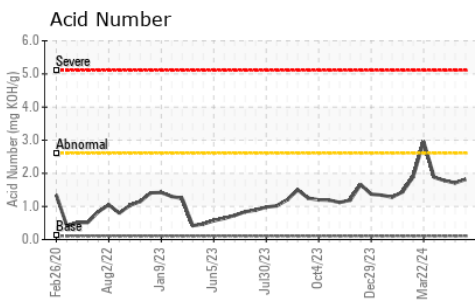
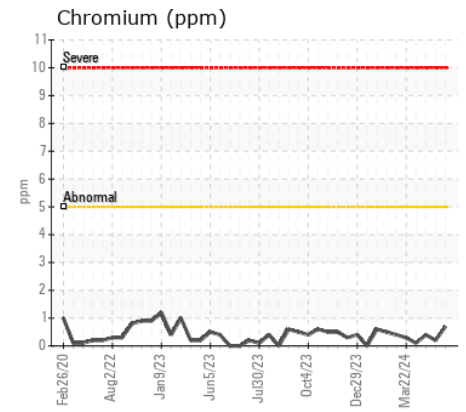
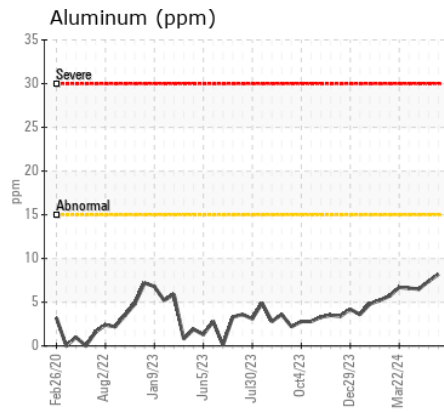
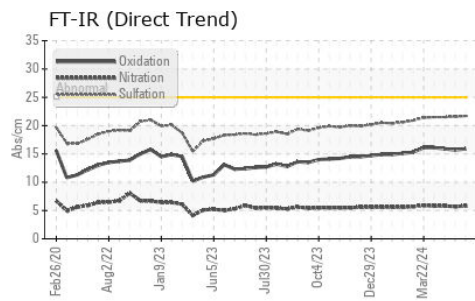
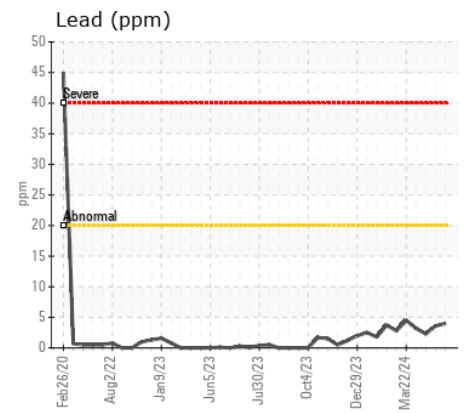
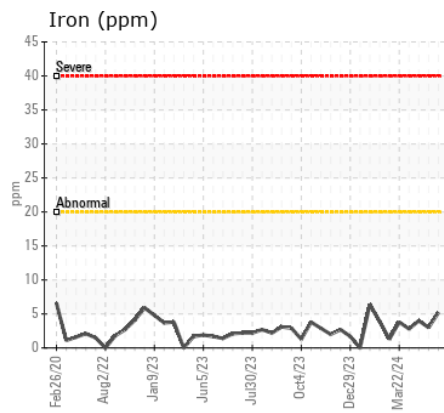
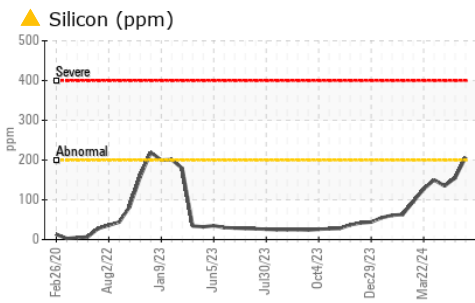
Elemental level of silicon (Si) above normal.

|                  |          |             |       |                |       |       |
|------------------|----------|-------------|-------|----------------|-------|-------|
| Silicon          | ppm      | ASTM D5185m | >200  | <b>▲ 207</b>   | 155   | 135   |
| Potassium        | ppm      | ASTM D5185m | >20   | <b>0</b>       | 1     | 0     |
| Fuel             |          | WC Method   | >4.0  | <b>&lt;1.0</b> | <1.0  | <1.0  |
| Water            |          | WC Method   | >.2   | <b>NEG</b>     | NEG   | NEG   |
| Glycol           |          | WC Method   |       | <b>NEG</b>     | NEG   | NEG   |
| Soot %           | %        | *ASTM D7844 | >2    | <b>0.1</b>     | 0     | 0     |
| Nitration        | Abs/cm   | *ASTM D7624 | >20   | <b>5.8</b>     | 5.7   | 5.8   |
| Sulfation        | Abs/.1mm | *ASTM D7415 | >30   | <b>21.7</b>    | 21.6  | 21.5  |
| Silt             | scalar   | *Visual     | NONE  | <b>NONE</b>    | NONE  | NONE  |
| Debris           | scalar   | *Visual     | NONE  | <b>NONE</b>    | NONE  | NONE  |
| Sand/Dirt        | scalar   | *Visual     | NONE  | <b>NONE</b>    | NONE  | NONE  |
| Appearance       | scalar   | *Visual     | NORML | <b>NORML</b>   | NORML | NORML |
| Odor             | scalar   | *Visual     | NORML | <b>NORML</b>   | NORML | NORML |
| Emulsified Water | scalar   | *Visual     | >.2   | <b>NEG</b>     | NEG   | NEG   |

## FLUID CONDITION

The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

|                  |          |             |      |              |      |      |
|------------------|----------|-------------|------|--------------|------|------|
| Sodium           | ppm      | ASTM D5185m | >20  | <b>2</b>     | 1    | 2    |
| Boron            | ppm      | ASTM D5185m |      | <b>0</b>     | <1   | 0    |
| Barium           | ppm      | ASTM D5185m |      | <b>0</b>     | 0    | 0    |
| Molybdenum       | ppm      | ASTM D5185m |      | <b>&lt;1</b> | <1   | <1   |
| Manganese        | ppm      | ASTM D5185m |      | <b>&lt;1</b> | <1   | 0    |
| Magnesium        | ppm      | ASTM D5185m |      | <b>5</b>     | 8    | 4    |
| Calcium          | ppm      | ASTM D5185m | 1500 | <b>2066</b>  | 2002 | 1842 |
| Phosphorus       | ppm      | ASTM D5185m | 280  | <b>346</b>   | 350  | 295  |
| Zinc             | ppm      | ASTM D5185m | 330  | <b>459</b>   | 456  | 366  |
| Sulfur           | ppm      | ASTM D5185m |      | <b>3892</b>  | 3906 | 3246 |
| Oxidation        | Abs/.1mm | *ASTM D7414 | >25  | <b>15.9</b>  | 15.7 | 15.9 |
| Acid Number (AN) | mg KOH/g | ASTM D8045  | 0.11 | <b>1.82</b>  | 1.71 | 1.78 |
| Base Number (BN) | mg KOH/g | ASTM D2896  | 5.5  | <b>3.86</b>  | 4.07 | 3.60 |
| Visc @ 100°C     | cSt      | ASTM D445   | 13.9 | <b>14.4</b>  | 14.4 | 14.5 |



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : WC0896453  
**Lab Number** : 06192458  
**Unique Number** : 11049210  
**Test Package** : MOB 2  
**Received** : 28 May 2024  
**Tested** : 29 May 2024  
**Diagnosed** : 30 May 2024 - Sean Felton

**SANTEE COOPER / LEE COUNTY LANDFILL**  
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Certificate L2367  
 To discuss this sample report, contact Customer Service at 1-800-237-1369.  
 \* - 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)