



OIL ANALYSIS REPORT

| | |
|-----------------|--------|
| WEAR | NORMAL |
| CONTAMINATION | NORMAL |
| FLUID CONDITION | NORMAL |

Machine Id
E-2 - RICHLAND CREEK

Component
Biogas Engine

Fluid
MAHLER Q8 Mahler G8 SAE 40 (--- GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number | | Client Info | | WC0880361 | WC0880365 | WC0880373 |
| Sample Date | | Client Info | | 03 Jan 2024 | 26 Dec 2023 | 24 Dec 2023 |
| Machine Age | hrs | Client Info | | 48994 | 45811 | 0 |
| Oil Age | hrs | Client Info | | 3341 | 3158 | 0 |
| Filter Age | hrs | Client Info | | 1180 | 997 | 0 |
| Oil Changed | | Client Info | | N/A | Not Changd | N/A |
| Filter Changed | | Client Info | | N/A | Not Changd | N/A |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |

WEAR

All component wear rates are normal.

| | | | | | | |
|--------------|--------|-------------|------|--------------|------|------|
| Iron | ppm | ASTM D5185m | >45 | 10 | 10 | 10 |
| Chromium | ppm | ASTM D5185m | >2 | <1 | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >2 | <1 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | <1 | 0 | 0 |
| Silver | ppm | ASTM D5185m | >5 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >10 | 2 | 4 | 4 |
| Lead | ppm | ASTM D5185m | >5 | 2 | 2 | 0 |
| Copper | ppm | ASTM D5185m | >14 | 2 | 2 | <1 |
| Tin | ppm | ASTM D5185m | >13 | 7 | 7 | 6 |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |

CONTAMINATION

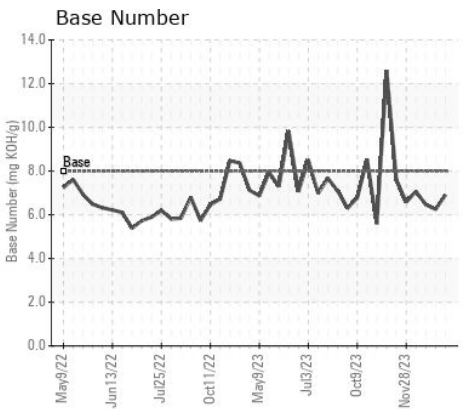
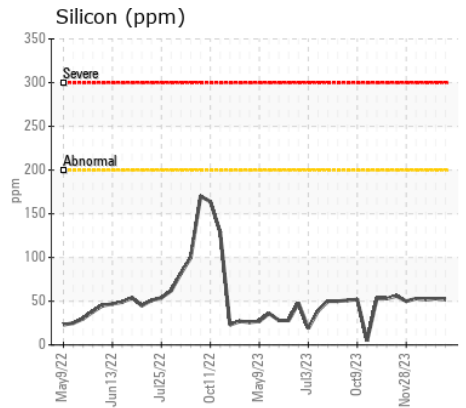
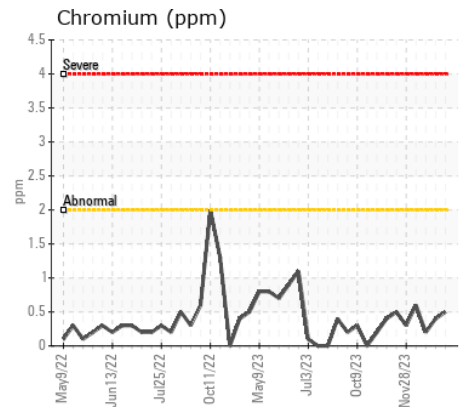
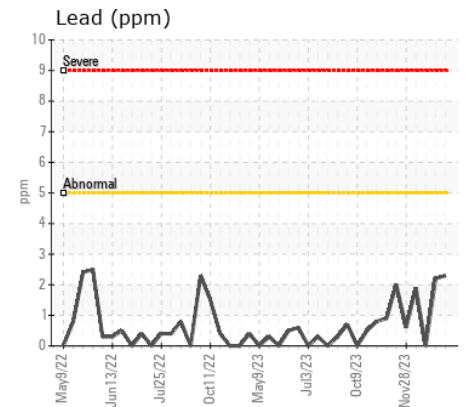
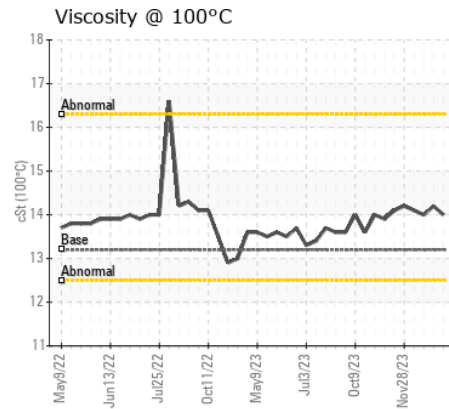
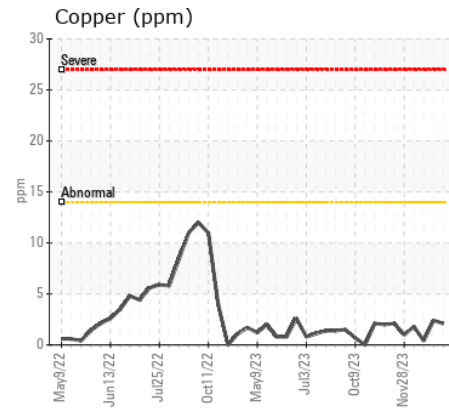
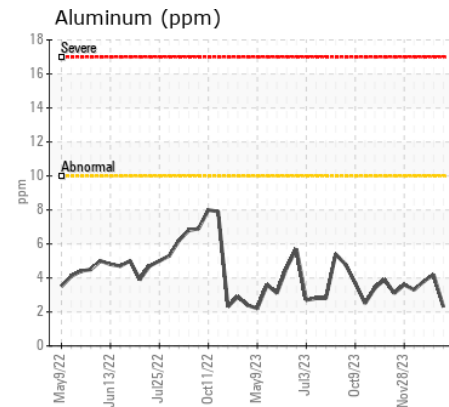
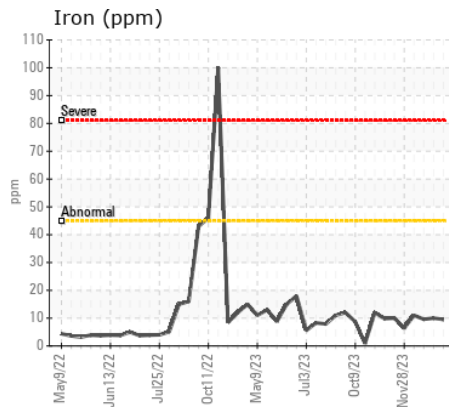
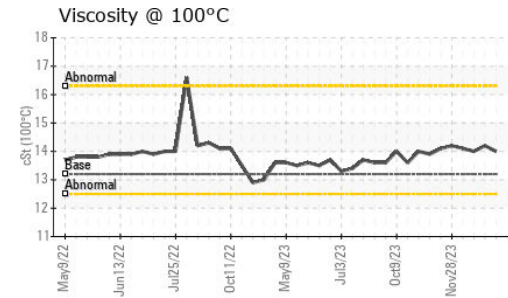
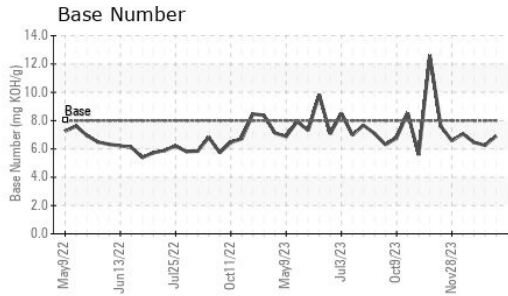
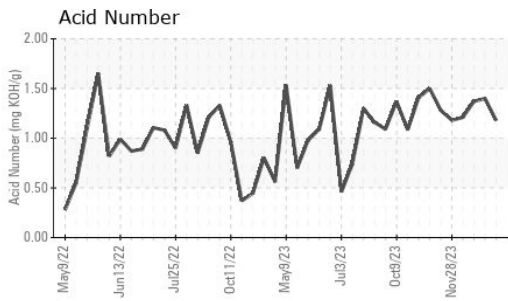
There is no indication of any contamination in the oil.

| | | | | | | |
|------------------|----------|-------------|-------|----------------|-------|-------|
| Silicon | ppm | ASTM D5185m | >200 | 52 | 53 | 52 |
| Potassium | ppm | ASTM D5185m | >20 | 15 | 19 | 13 |
| Fuel | | WC Method | >4.0 | <1.0 | <1.0 | <1.0 |
| Water | | WC Method | >0.1 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| Soot % | % | *ASTM D7844 | | 0 | 0 | 0 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 8.0 | 8.7 | 8.1 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 18.7 | 18.4 | 18.9 |
| Silt | scalar | *Visual | NONE | NONE | NONE | NONE |
| Debris | scalar | *Visual | NONE | NONE | NONE | NONE |
| Sand/Dirt | scalar | *Visual | NONE | NONE | NONE | NONE |
| Appearance | scalar | *Visual | NORML | NORML | NORML | NORML |
| Odor | scalar | *Visual | NORML | NORML | NORML | NORML |
| Emulsified Water | scalar | *Visual | >0.1 | NEG | 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 | | 24 | 39 | 29 |
| Boron | ppm | ASTM D5185m | | 3 | 3 | 1 |
| Barium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | 3 | <1 | 0 |
| Manganese | ppm | ASTM D5185m | | 1 | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | | 17 | 13 | 12 |
| Calcium | ppm | ASTM D5185m | | 2509 | 2368 | 2386 |
| Phosphorus | ppm | ASTM D5185m | | 451 | 429 | 435 |
| Zinc | ppm | ASTM D5185m | | 527 | 522 | 524 |
| Sulfur | ppm | ASTM D5185m | | 2986 | 2488 | 2475 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 15.0 | 14.5 | 15.3 |
| Acid Number (AN) | mg KOH/g | ASTM D8045 | | 1.18 | 1.40 | 1.37 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 8.0 | 6.91 | 6.25 | 6.46 |
| Visc @ 100°C | cSt | ASTM D445 | 13.2 | 14.0 | 14.2 | 14.0 |



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0880361 **Received** : 08 Jan 2024
Lab Number : 06055009 **Diagnosed** : 10 Jan 2024
Unique Number : 10820958 **Diagnostician** : Sean Felton
Test Package : MOB 2

CUBE DISTRICT ENERGY - MAS GEORGIA LFG PLANT SITE
 5691 S RICHLAND CREEK RD
 BUFORD, GA
 US 30518
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 ryan.ingalls@cubedistrictenergy.com
 T:
 F:

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)