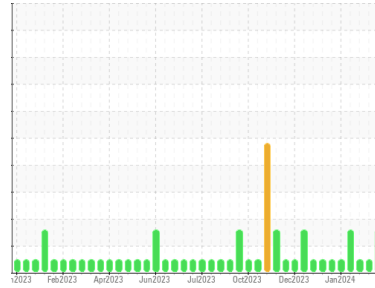




# OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id  
**LGS00181**

Component  
**Middle Biogas Engine**

Fluid  
**CITGO PACEMAKER GAS ENGINE LFG LA 40 (--- GAL)**

## DIAGNOSIS

### Recommendation

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

### Wear

All component wear rates are normal.

### Contamination

Elemental level of silicon (Si) above normal indicating ingress of seal material.

### 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.

## SAMPLE INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	<b>WC0803403</b>	WC0803412	WC0803453
Sample Date	Client Info	<b>19 Feb 2024</b>	12 Feb 2024	05 Feb 2024
Machine Age	hrs	Client Info	65414	65250
Oil Age	hrs	Client Info	259	95
Oil Changed	Client Info	<b>N/A</b>	N/A	N/A
Sample Status		<b>ABNORMAL</b>	NORMAL	NORMAL

## CONTAMINATION

method	limit/base	current	history1	history2
Fuel	WC Method >4.0	<b>&lt;1.0</b>	<1.0	<1.0
Water	WC Method >0.1	<b>NEG</b>	NEG	NEG
Glycol	WC Method	<b>NEG</b>	NEG	NEG

## WEAR METALS

method	limit/base	current	history1	history2
Iron	ppm ASTM D5185m >45	<b>9</b>	4	0
Chromium	ppm ASTM D5185m >2	<b>&lt;1</b>	0	0
Nickel	ppm ASTM D5185m >2	<b>&lt;1</b>	<1	0
Titanium	ppm ASTM D5185m	<b>&lt;1</b>	0	0
Silver	ppm ASTM D5185m >5	<b>&lt;1</b>	0	0
Aluminum	ppm ASTM D5185m >10	<b>&lt;1</b>	2	<1
Lead	ppm ASTM D5185m >5	<b>&lt;1</b>	<1	2
Copper	ppm ASTM D5185m >14	<b>3</b>	1	<1
Tin	ppm ASTM D5185m >13	<b>4</b>	3	<1
Vanadium	ppm ASTM D5185m	<b>&lt;1</b>	0	0
Cadmium	ppm ASTM D5185m	<b>&lt;1</b>	0	0

## ADDITIVES

method	limit/base	current	history1	history2
Boron	ppm ASTM D5185m	<b>2</b>	<1	9
Barium	ppm ASTM D5185m	<b>5</b>	0	0
Molybdenum	ppm ASTM D5185m	<b>4</b>	2	3
Manganese	ppm ASTM D5185m	<b>&lt;1</b>	<1	1
Magnesium	ppm ASTM D5185m	<b>22</b>	26	15
Calcium	ppm ASTM D5185m	<b>1261</b>	1336	1618
Phosphorus	ppm ASTM D5185m	<b>242</b>	303	203
Zinc	ppm ASTM D5185m	<b>328</b>	352	306
Sulfur	ppm ASTM D5185m	<b>3119</b>	2956	1633

## CONTAMINANTS

method	limit/base	current	history1	history2
Silicon	ppm ASTM D5185m >200	<b>▲ 239</b>	165	20
Sodium	ppm ASTM D5185m	<b>0</b>	1	<1
Potassium	ppm ASTM D5185m >20	<b>2</b>	2	<1

## INFRA-RED

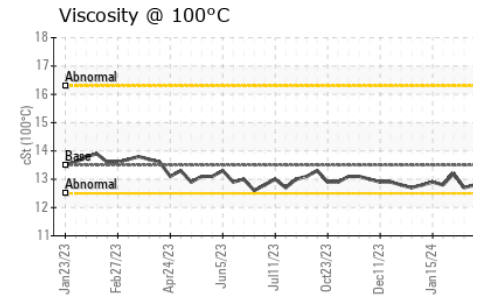
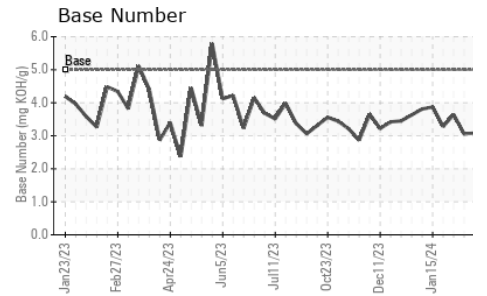
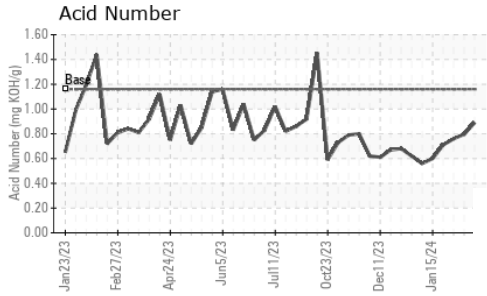
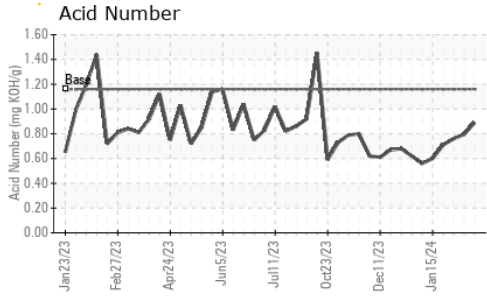
method	limit/base	current	history1	history2
Soot %	% *ASTM D7844	<b>0</b>	0	0
Nitration	Abs/cm *ASTM D7624 >20	<b>3.4</b>	3.3	3.2
Sulfation	Abs/.1mm *ASTM D7415 >30	<b>17.5</b>	16.7	15.5

## FLUID DEGRADATION

method	limit/base	current	history1	history2
Oxidation	Abs/.1mm *ASTM D7414 >25	<b>7.1</b>	6.8	6.6
Acid Number (AN)	mg KOH/g ASTM D8045 1.16	<b>0.89</b>	0.796	0.76
Base Number (BN)	mg KOH/g ASTM D2896 5	<b>3.08</b>	3.06	3.64



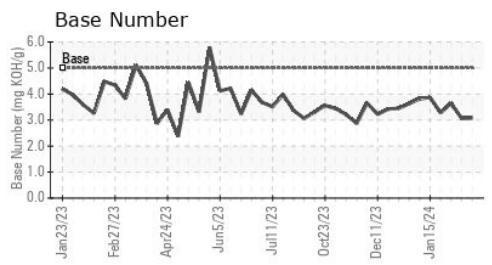
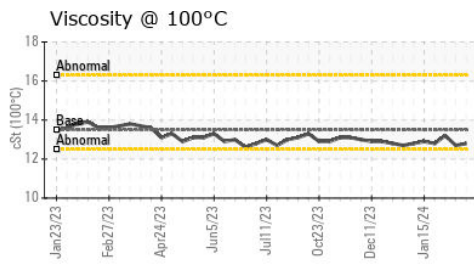
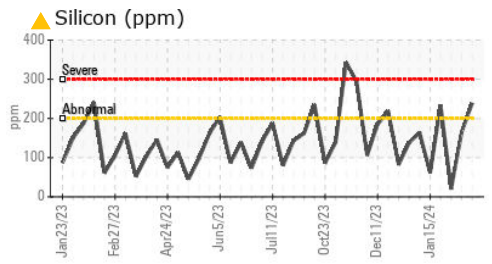
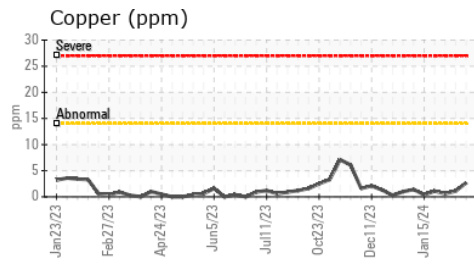
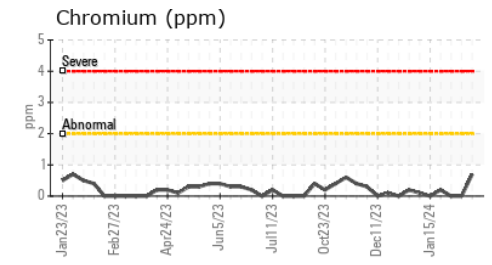
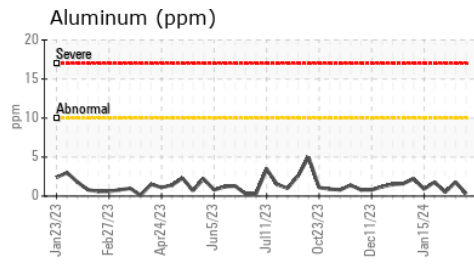
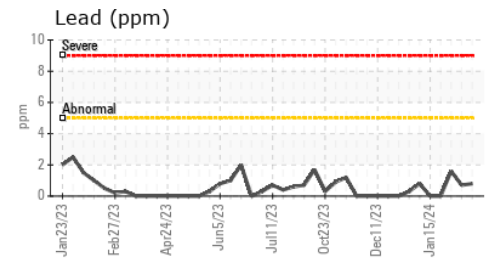
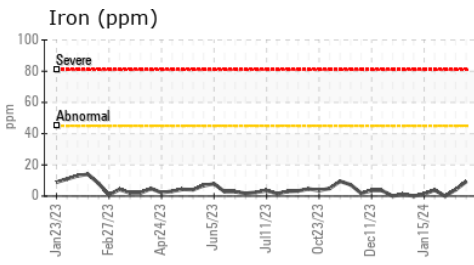
# OIL ANALYSIS REPORT



VISUAL	method	limit/base	current	history1	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	>0.1	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	13.5	12.8	12.7

### GRAPHS



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : WC0803403  
**Lab Number** : 06099288  
**Unique Number** : 10897518  
**Test Package** : MOB 2  
**Received** : 23 Feb 2024  
**Tested** : 26 Feb 2024  
**Diagnosed** : 27 Feb 2024 - Sean Felton

**BLACK OAK**  
 5054 HWY HH  
 HARTVILLE, MO  
 US 65667

Contact: CHIP MATHEWS  
 chip.matthews@cubedistrictenergy.com

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)

T:  
F: