



# OIL ANALYSIS REPORT

WEAR	<b>NORMAL</b>
CONTAMINATION	<b>NORMAL</b>
FLUID CONDITION	<b>NORMAL</b>

Machine Id  
**LGS00181**  
 Component  
**Middle Biogas Engine**  
 Fluid  
**CITGO PACEMAKER GAS ENGINE LFG LA 40 (--- GAL)**

## RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>WC0803415</b>	WC0803414	WC0803470
Sample Date		Client Info		<b>01 Jul 2024</b>	17 Jun 2024	11 Jun 2024
Machine Age	hrs	Client Info		<b>68024</b>	67695	67544
Oil Age	hrs	Client Info		<b>263</b>	453	394
Filter Age	hrs	Client Info		<b>263</b>	453	302
Oil Changed		Client Info		<b>N/A</b>	N/A	N/A
Filter Changed		Client Info		<b>N/A</b>	N/A	N/A
Sample Status				<b>NORMAL</b>	NORMAL	NORMAL

## WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>45	<b>5</b>	8	6
Chromium	ppm	ASTM D5185m	>2	<b>&lt;1</b>	<1	<1
Nickel	ppm	ASTM D5185m	>2	<b>&lt;1</b>	0	0
Titanium	ppm	ASTM D5185m		<b>&lt;1</b>	<1	0
Silver	ppm	ASTM D5185m	>5	<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m	>10	<b>2</b>	<1	1
Lead	ppm	ASTM D5185m	>5	<b>&lt;1</b>	<1	<1
Copper	ppm	ASTM D5185m	>14	<b>2</b>	2	2
Tin	ppm	ASTM D5185m	>13	<b>2</b>	3	2
Vanadium	ppm	ASTM D5185m		<b>&lt;1</b>	0	<1
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE

## CONTAMINATION

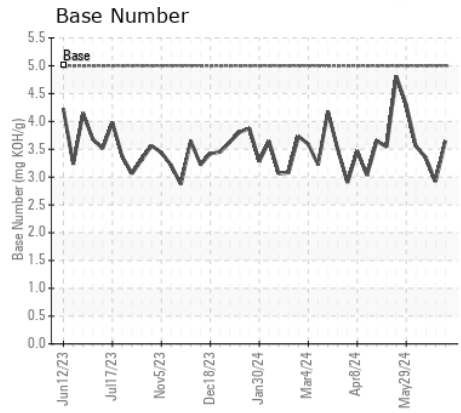
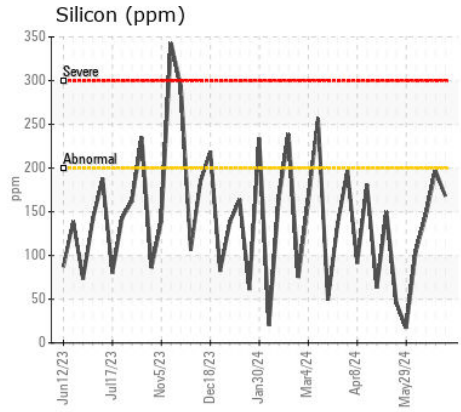
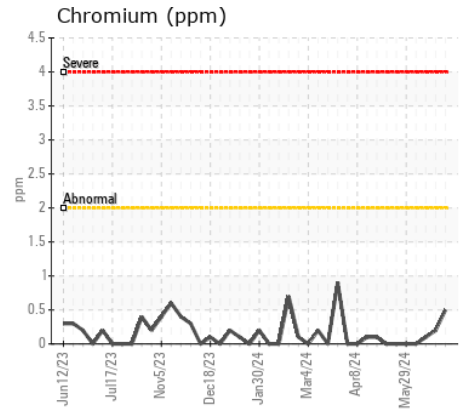
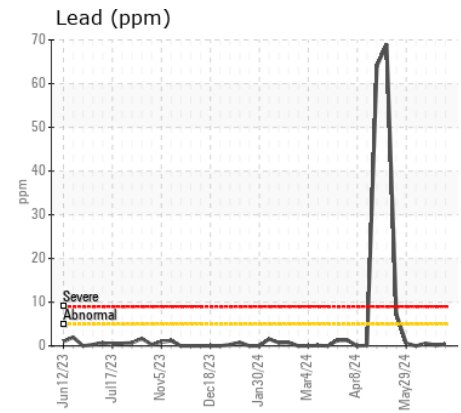
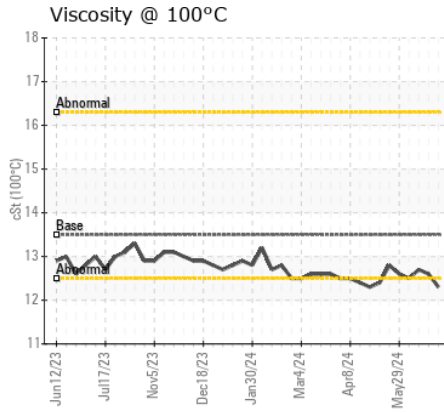
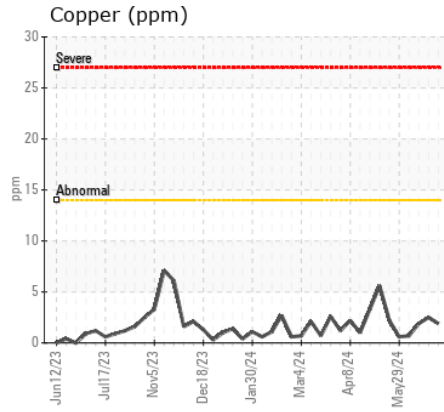
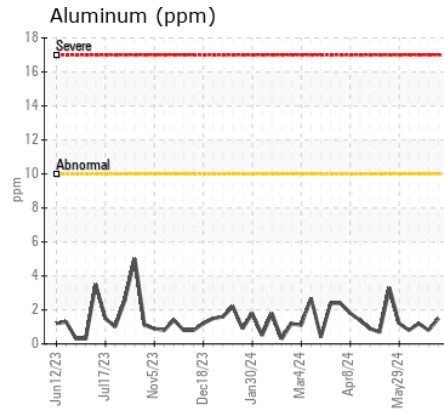
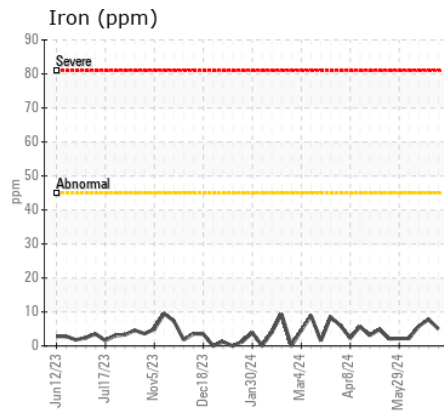
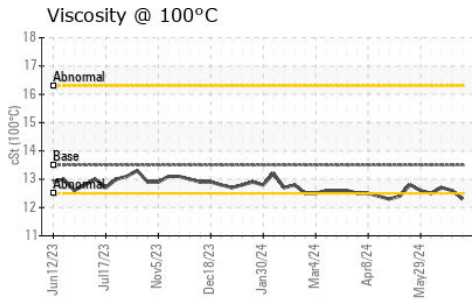
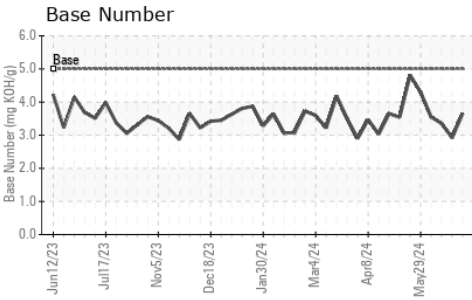
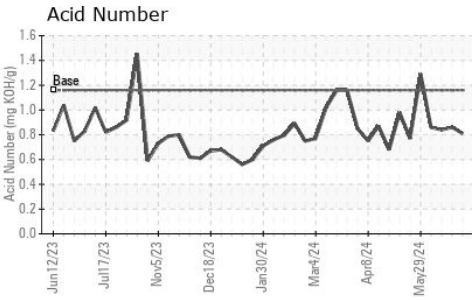
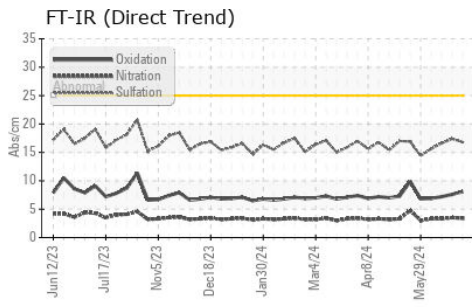
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>200	<b>168</b>	197	145
Potassium	ppm	ASTM D5185m	>20	<b>&lt;1</b>	0	<1
Fuel	%	ASTM D3524	>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
Soot %	%	*ASTM D7844		<b>0</b>	0	0
Nitration	Abs/cm	*ASTM D7624	>20	<b>3.4</b>	3.5	3.3
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>16.8</b>	17.4	16.6
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	>0.1	<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		<b>0</b>	3	2
Boron	ppm	ASTM D5185m		<b>2</b>	2	0
Barium	ppm	ASTM D5185m		<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185m		<b>16</b>	3	3
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	<1	<1
Magnesium	ppm	ASTM D5185m		<b>36</b>	26	22
Calcium	ppm	ASTM D5185m		<b>1570</b>	1490	1657
Phosphorus	ppm	ASTM D5185m		<b>319</b>	294	320
Zinc	ppm	ASTM D5185m		<b>393</b>	364	394
Sulfur	ppm	ASTM D5185m		<b>3212</b>	3557	3753
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>8.1</b>	7.6	7.2
Acid Number (AN)	mg KOH/g	ASTM D8045	1.16	<b>0.81</b>	0.86	0.84
Base Number (BN)	mg KOH/g	ASTM D2896	5	<b>3.65</b>	2.92	3.35
Visc @ 100°C	cSt	ASTM D445	13.5	<b>12.3</b>	12.6	12.7



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : WC0803415 **Received** : 03 Jul 2024  
**Lab Number** : 06228125 **Tested** : 08 Jul 2024  
**Unique Number** : 11111618 **Diagnosed** : 08 Jul 2024 - Jonathan Hester  
**Test Package** : MOB 2 ( Additional Tests: FuelDilution, PercentFuel )

**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: