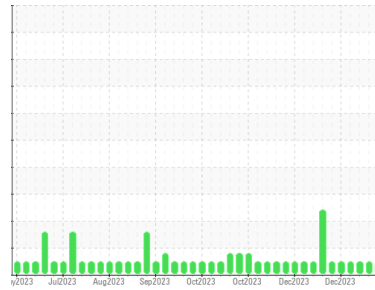




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Machine Id
CATERPILLAR GM01
 Component
Biogas Engine
 Fluid
MAHLER Q8 Mahler G8 SAE 40 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

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 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		WC0870515	WC0870567	WC0870521
Sample Date	Client Info		31 Jan 2024	25 Jan 2024	04 Jan 2024
Machine Age	hrs	Client Info	24868	24728	24580
Oil Age	hrs	Client Info	220	80	362
Oil Changed	Client Info		N/A	Changed	N/A
Sample Status			NORMAL	NORMAL	NORMAL

CONTAMINATION

	method	limit/base	current	history1	history2
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

WEAR METALS

	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m	>45	12	12	9
Chromium	ppm	ASTM D5185m	>2	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5185m	>10	2	2	2
Lead	ppm	ASTM D5185m	>5	<1	<1	<1
Copper	ppm	ASTM D5185m	>14	1	<1	<1
Tin	ppm	ASTM D5185m	>13	2	<1	2
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0

ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m		<1	<1	1
Barium	ppm	ASTM D5185m		<1	0	0
Molybdenum	ppm	ASTM D5185m		<1	2	0
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		9	15	7
Calcium	ppm	ASTM D5185m		1319	1302	1456
Phosphorus	ppm	ASTM D5185m		368	383	402
Zinc	ppm	ASTM D5185m		447	442	476
Sulfur	ppm	ASTM D5185m		1880	1855	2046

CONTAMINANTS

	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>200	160	70	183
Sodium	ppm	ASTM D5185m		<1	<1	2
Potassium	ppm	ASTM D5185m	>20	0	0	0

INFRA-RED

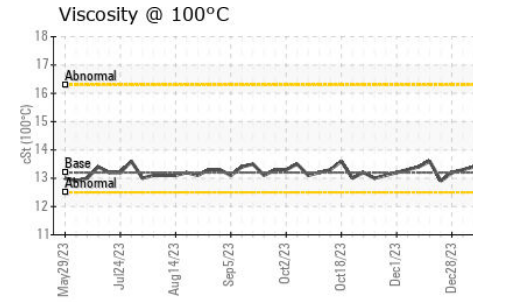
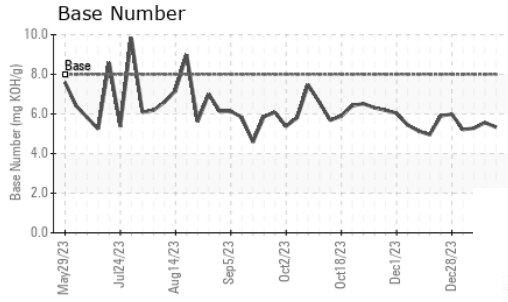
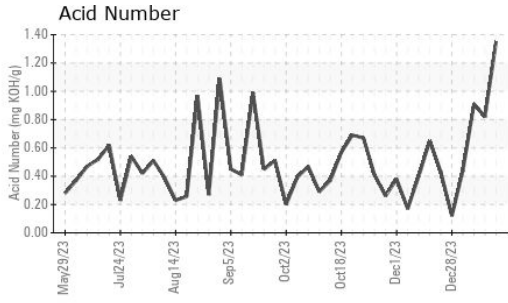
	method	limit/base	current	history1	history2	
Soot %	%	*ASTM D7844		0	0	0
Nitration	Abs/cm	*ASTM D7624	>20	5.8	5.1	5.7
Sulfation	Abs/.1mm	*ASTM D7415	>30	16.7	15.5	16.4

FLUID DEGRADATION

	method	limit/base	current	history1	history2	
Oxidation	Abs/.1mm	*ASTM D7414	>25	11.4	9.6	11.4
Acid Number (AN)	mg KOH/g	ASTM D8045		1.35	0.82	0.91
Base Number (BN)	mg KOH/g	ASTM D2896	8.0	5.33	5.56	5.28



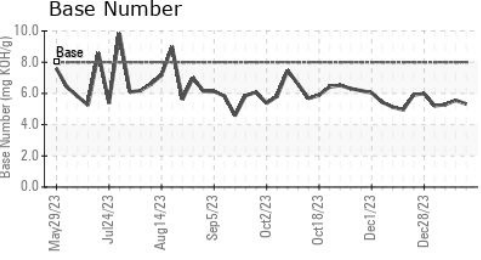
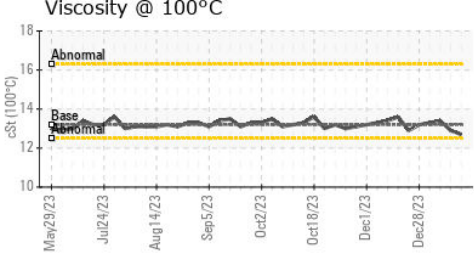
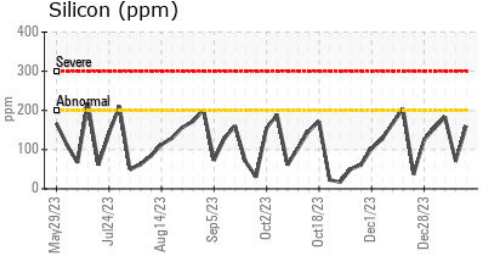
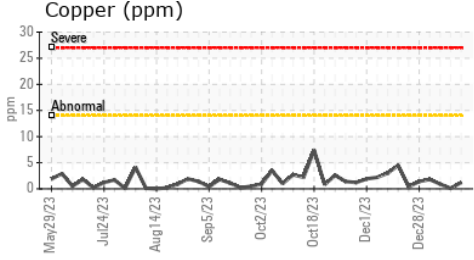
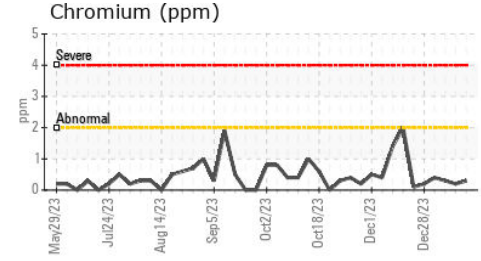
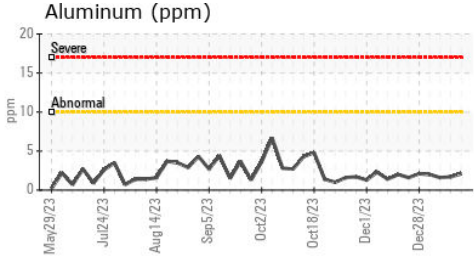
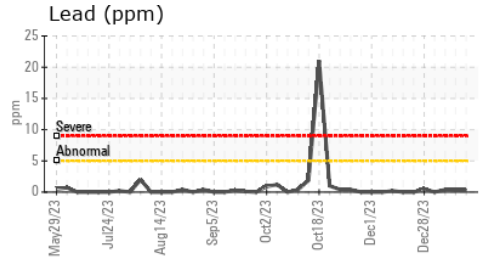
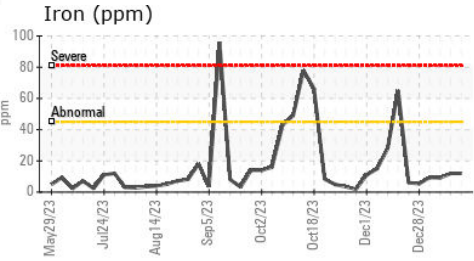
OIL ANALYSIS REPORT



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	13.2	12.7	12.9

GRAPHS



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0870515 **Received** : 01 Feb 2024
Lab Number : 06077060 **Diagnosed** : 02 Feb 2024
Unique Number : 10859151 **Diagnostician** : Sean Felton
Test Package : MOB 2

OAK GROVE KS
 1150 E 700TH AVE
 ARCADIA, KS
 US 66711

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)

Contact: KALEB WEAVER
 kaleb.weaver@cubedistrictenergy.com
 T:
 F: