



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	ABNORMAL
FLUID CONDITION	NORMAL



Machine Id
CATERPILLAR GM01
Component
Biogas Engine
Fluid
MAHLER Q8 Mahler G8 SAE 40 (--- 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		WC0870513	WC0870564	WC0870510
Sample Date		Client Info		27 Feb 2024	20 Feb 2024	13 Feb 2024
Machine Age	hrs	Client Info		25501	25337	25171
Oil Age	hrs	Client Info		354	190	24
Filter Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Filter Changed		Client Info		N/A	N/A	N/A
Sample Status				ABNORMAL	NORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>45	17	16	3
Chromium	ppm	ASTM D5185m	>2	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	<1	<1	<1
Titanium	ppm	ASTM D5185m		0	<1	<1
Silver	ppm	ASTM D5185m	>5	0	<1	0
Aluminum	ppm	ASTM D5185m	>10	2	2	<1
Lead	ppm	ASTM D5185m	>5	1	0	0
Copper	ppm	ASTM D5185m	>14	1	1	<1
Tin	ppm	ASTM D5185m	>13	2	1	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

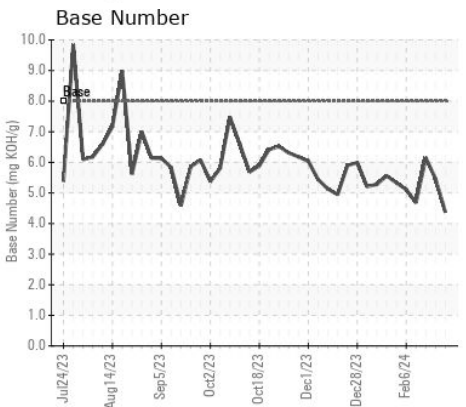
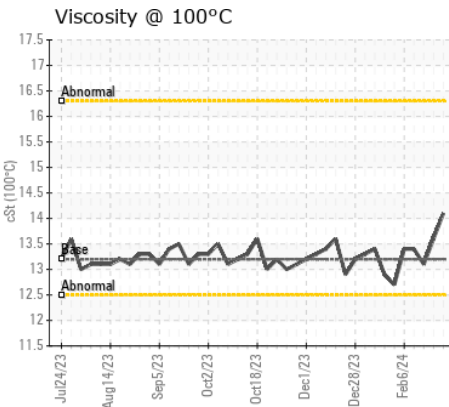
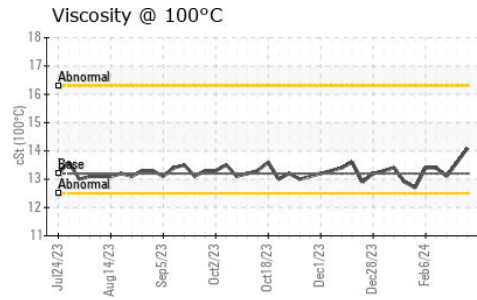
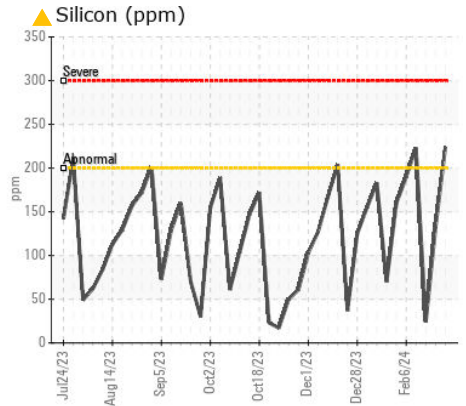
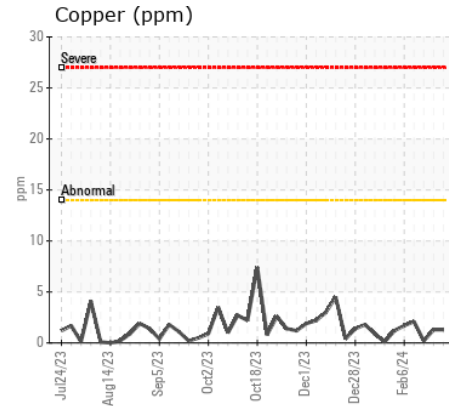
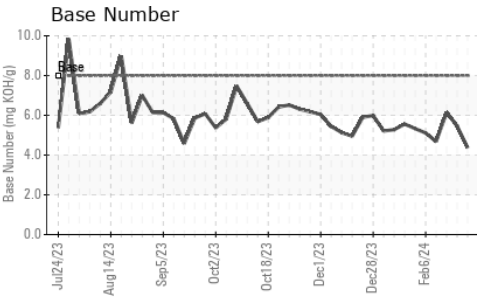
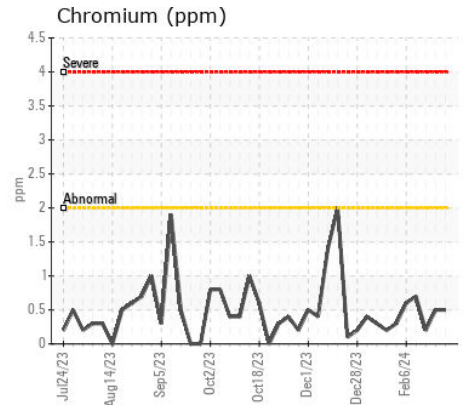
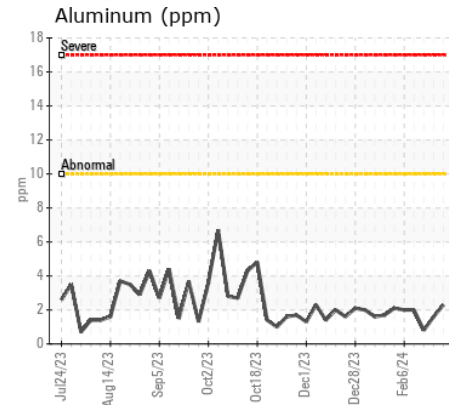
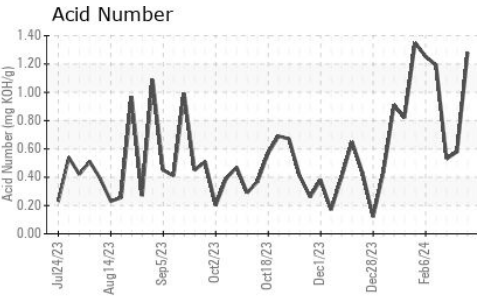
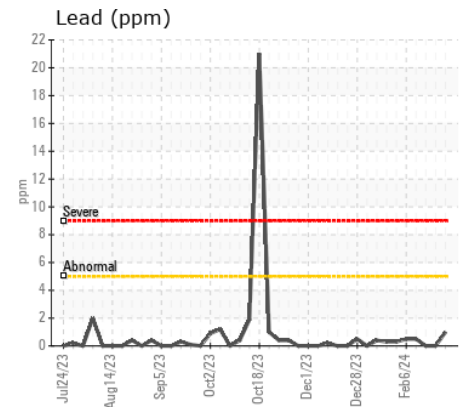
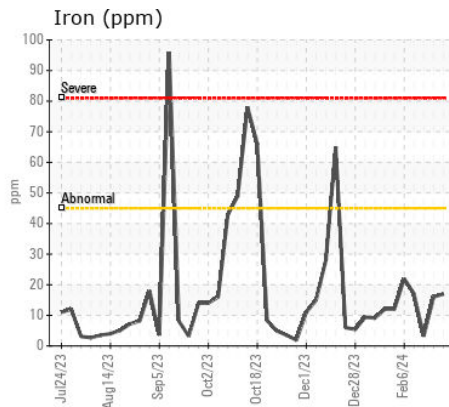
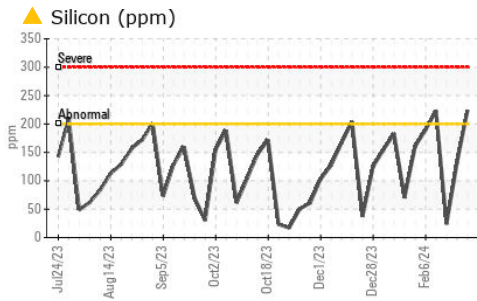
Elemental level of silicon (Si) above normal indicating ingress of seal material.

Silicon	ppm	ASTM D5185m	>200	▲ 224	132	24
Potassium	ppm	ASTM D5185m	>20	0	2	<1
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	6.3	5.8	4.5
Sulfation	Abs/.1mm	*ASTM D7415	>30	17.5	16.5	15.0
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		2	0	0
Boron	ppm	ASTM D5185m		1	<1	1
Barium	ppm	ASTM D5185m		0	0	5
Molybdenum	ppm	ASTM D5185m		<1	<1	<1
Manganese	ppm	ASTM D5185m		<1	<1	0
Magnesium	ppm	ASTM D5185m		4	5	6
Calcium	ppm	ASTM D5185m		1516	1351	1067
Phosphorus	ppm	ASTM D5185m		337	419	317
Zinc	ppm	ASTM D5185m		450	446	379
Sulfur	ppm	ASTM D5185m		1862	2137	1626
Oxidation	Abs/.1mm	*ASTM D7414	>25	13.4	11.3	9.2
Acid Number (AN)	mg KOH/g	ASTM D8045		1.28	0.58	0.53
Base Number (BN)	mg KOH/g	ASTM D2896	8.0	4.37	5.46	6.15
Visc @ 100°C	cSt	ASTM D445	13.2	14.1	13.6	13.1



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0870513
Lab Number : 06103170
Unique Number : 10901400
Test Package : MOB 2

OAK GROVE KS
 1150 E 700TH AVE
 ARCADIA, KS
 US 66711
 Contact: KALEB WEAVER
 kaleb.weaver@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)

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