



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL



Machine Id
CATERPILLAR GM01
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		WC0870558	WC0870563	WC0870556
Sample Date		Client Info		18 Mar 2024	12 Mar 2024	05 Mar 2024
Machine Age	hrs	Client Info		25870	25802	25659
Oil Age	hrs	Client Info		232	164	21
Filter Age	hrs	Client Info		232	0	21
Oil Changed		Client Info		N/A	N/A	Changed
Filter Changed		Client Info		N/A	N/A	Changed
Sample Status				NORMAL	NORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>45	41	14	4
Chromium	ppm	ASTM D5185m	>2	0	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	<1	<1
Titanium	ppm	ASTM D5185m		0	<1	<1
Silver	ppm	ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5185m	>10	2	2	2
Lead	ppm	ASTM D5185m	>5	0	<1	<1
Copper	ppm	ASTM D5185m	>14	0	1	<1
Tin	ppm	ASTM D5185m	>13	0	2	<1
Vanadium	ppm	ASTM D5185m		0	0	0
White Metal	scalar	*Visual	NONE	LIGHT	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

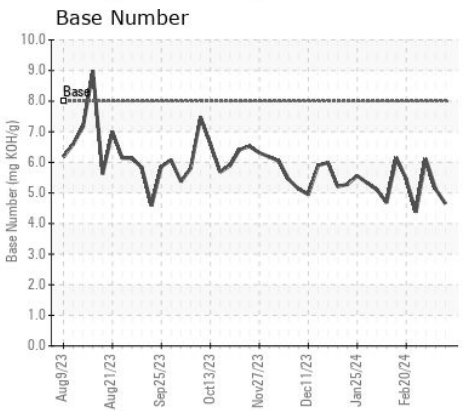
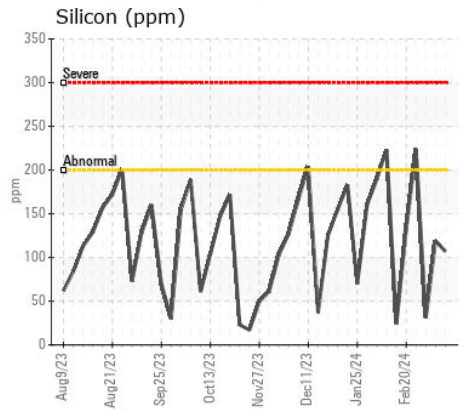
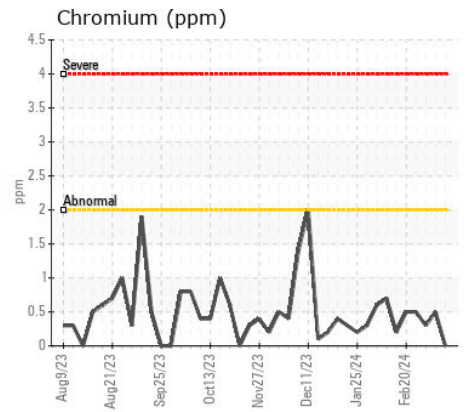
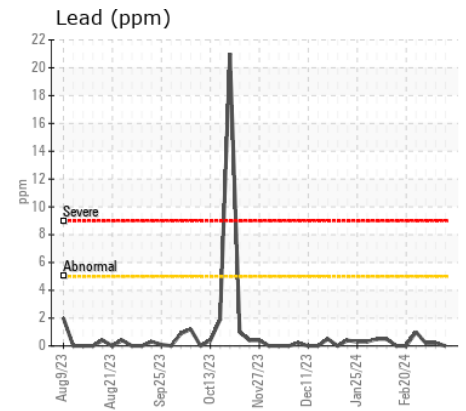
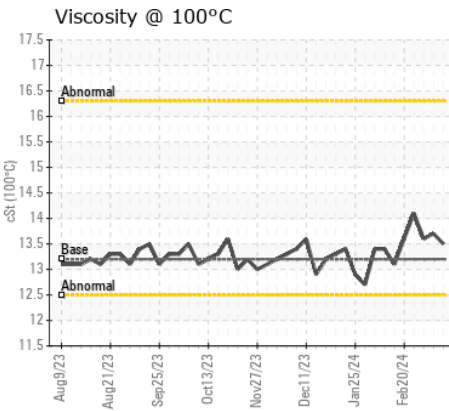
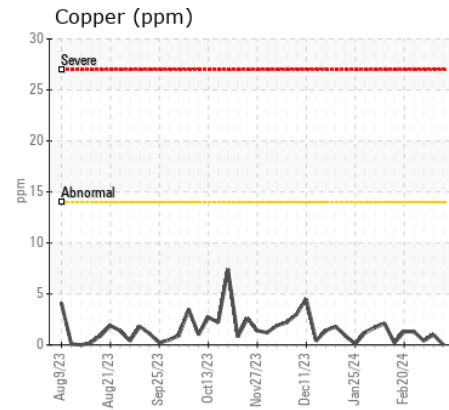
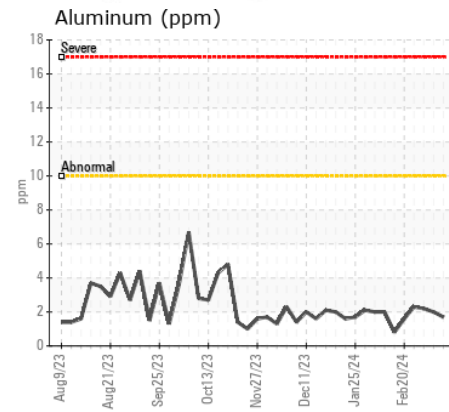
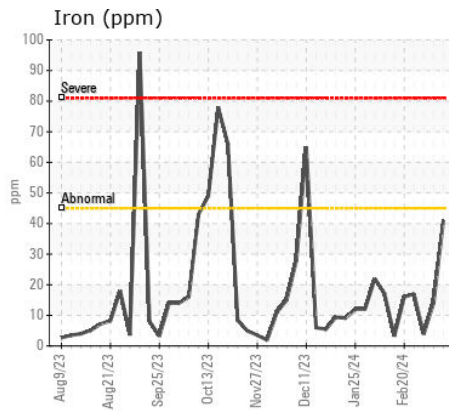
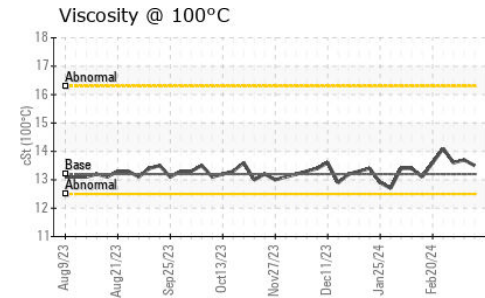
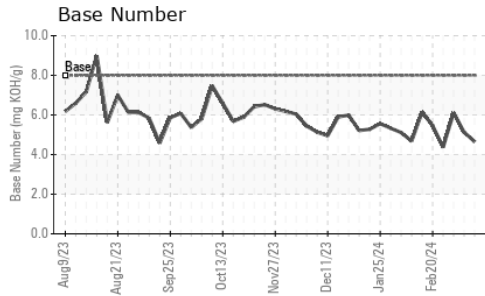
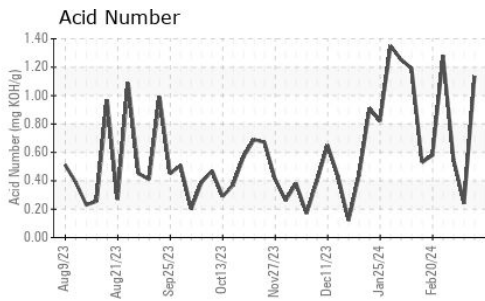
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>200	107	119	31
Potassium	ppm	ASTM D5185m	>20	0	<1	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		0.1	0	0
Nitration	Abs/cm	*ASTM D7624	>20	5.3	5.7	4.4
Sulfation	Abs/.1mm	*ASTM D7415	>30	16.0	16.4	14.9
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		<1	0	0
Boron	ppm	ASTM D5185m		0	<1	0
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		<1	<1	<1
Manganese	ppm	ASTM D5185m		0	<1	0
Magnesium	ppm	ASTM D5185m		11	3	3
Calcium	ppm	ASTM D5185m		1544	1378	1299
Phosphorus	ppm	ASTM D5185m		416	404	351
Zinc	ppm	ASTM D5185m		489	455	426
Sulfur	ppm	ASTM D5185m		2450	2268	1955
Oxidation	Abs/.1mm	*ASTM D7414	>25	10.7	11.4	9.4
Acid Number (AN)	mg KOH/g	ASTM D8045		1.136	0.24	0.55
Base Number (BN)	mg KOH/g	ASTM D2896	8.0	4.65	5.13	6.11
Visc @ 100°C	cSt	ASTM D445	13.2	13.5	13.7	13.6



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : WC0870558

Lab Number : 06123876

Unique Number : 10938027

Test Package : MOB 2

Received : 20 Mar 2024

Tested : 21 Mar 2024

Diagnosed : 22 Mar 2024 - Don Baldrige

OAK GROVE KS

1150 E 700TH AVE

ARCADIA, KS

US 66711

Contact: KALEB WEAVER

kaleb.weaver@cubedistrictenergy.com

T:

F:

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)