



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
E-4 - RICHLAND CREEK
 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		WC0880348	WC0880393	WC0880358
Sample Date		Client Info		15 Jan 2024	10 Jan 2024	03 Jan 2024
Machine Age	hrs	Client Info		45723	45609	45477
Oil Age	hrs	Client Info		3660	3546	3414
Filter Age	hrs	Client Info		3660	3546	3414
Oil Changed		Client Info		Not Changd	Not Changd	N/A
Filter Changed		Client Info		Not Changd	Not Changd	N/A
Sample Status				NORMAL	NORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>45	5	5	6
Chromium	ppm	ASTM D5185m	>2	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	0	<1
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5185m	>10	3	3	2
Lead	ppm	ASTM D5185m	>5	0	0	<1
Copper	ppm	ASTM D5185m	>14	4	4	4
Tin	ppm	ASTM D5185m	>13	5	5	6
Vanadium	ppm	ASTM D5185m		0	0	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

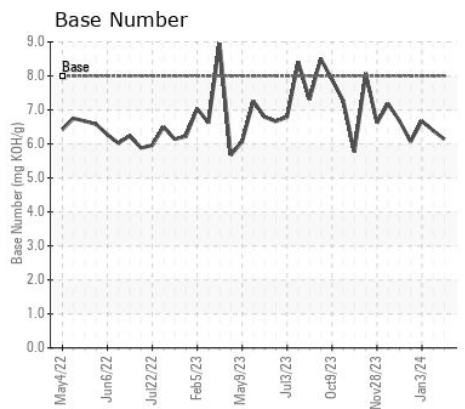
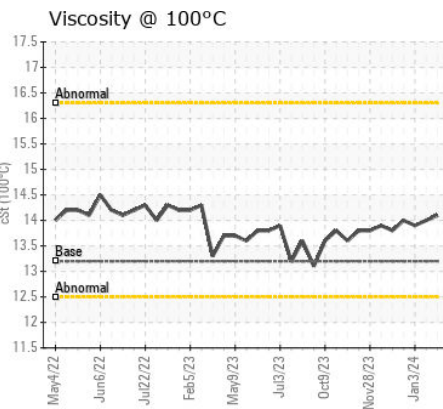
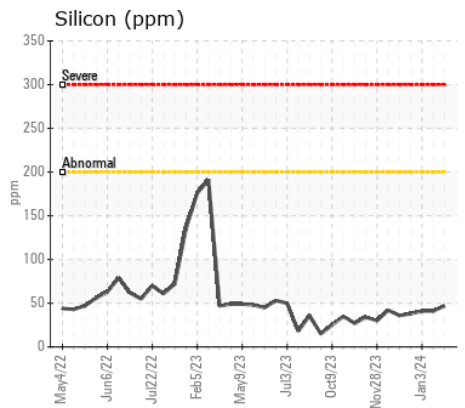
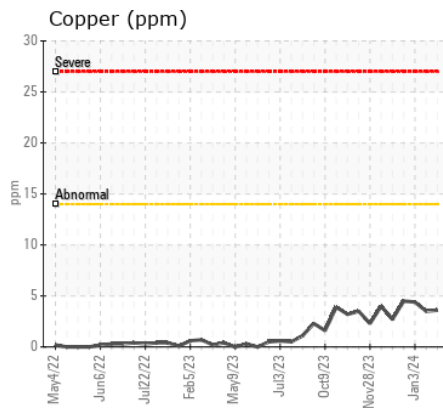
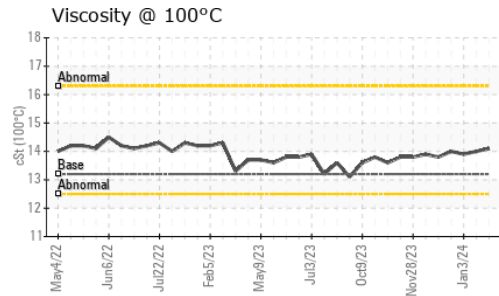
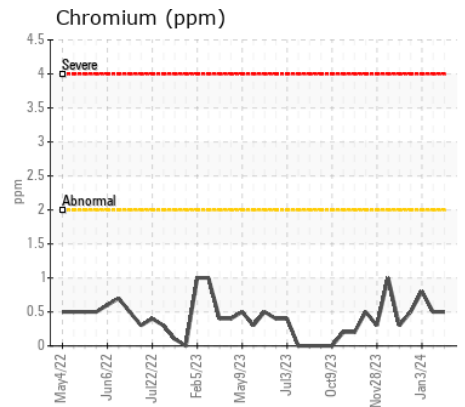
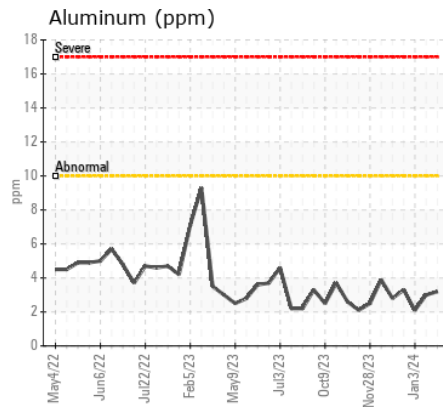
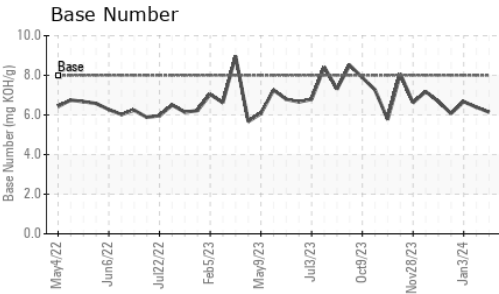
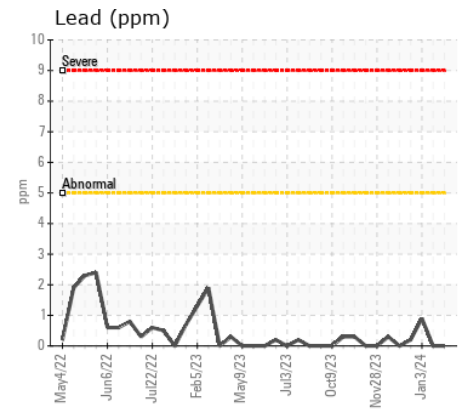
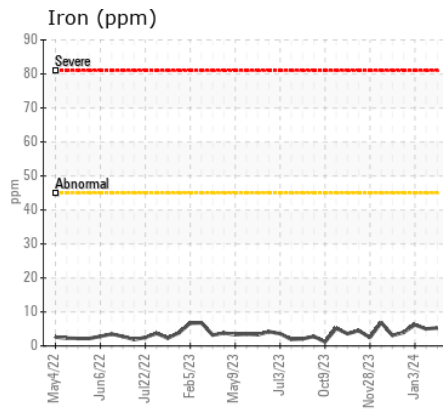
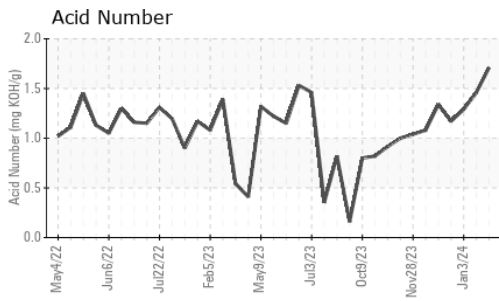
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>200	47	41	41
Potassium	ppm	ASTM D5185m	>20	<1	1	2
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	7.8	7.7	7.6
Sulfation	Abs/.1mm	*ASTM D7415	>30	19.1	18.8	18.2
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	1	0
Boron	ppm	ASTM D5185m		2	4	2
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		<1	<1	2
Manganese	ppm	ASTM D5185m		0	0	<1
Magnesium	ppm	ASTM D5185m		12	11	10
Calcium	ppm	ASTM D5185m		2410	2362	2496
Phosphorus	ppm	ASTM D5185m		450	437	438
Zinc	ppm	ASTM D5185m		498	496	514
Sulfur	ppm	ASTM D5185m		2733	2723	2902
Oxidation	Abs/.1mm	*ASTM D7414	>25	15.6	14.9	14.5
Acid Number (AN)	mg KOH/g	ASTM D8045		1.71	1.46	1.29
Base Number (BN)	mg KOH/g	ASTM D2896	8.0	6.14	6.39	6.67
Visc @ 100°C	cSt	ASTM D445	13.2	14.1	14.0	13.9



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0880348 **Received** : 17 Jan 2024
Lab Number : 06063777 **Diagnosed** : 20 Jan 2024
Unique Number : 10835159 **Diagnostician** : Don Baldrige
Test Package : MOB 2

CUBE DISTRICT ENERGY - MAS GEORGIA LFG PLANT SITE
 5691 S RICHLAND CREEK RD
 BUFORD, GA
 US 30518
 Contact: RYAN INGALLS
 ryan.ingalls@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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