



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL



Machine Id
ENG 4C
Component
Biogas Engine
Fluid
AMERICAN REFINING GROUP LOW ASH 40 (110 GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0909650	WC0909644	WC0909636
Sample Date		Client Info		16 Apr 2024	08 Apr 2024	01 Apr 2024
Machine Age	hrs	Client Info		84085	83893	83723
Oil Age	hrs	Client Info		458	266	96
Filter Age	hrs	Client Info		458	266	96
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	1	4	3
Chromium	ppm	ASTM D5185m	>2	<1	<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	3	2	2
Lead	ppm	ASTM D5185m	>5	<1	2	1
Copper	ppm	ASTM D5185m	>14	0	2	<1
Tin	ppm	ASTM D5185m	>13	3	4	2
Vanadium	ppm	ASTM D5185m		0	<1	<1
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

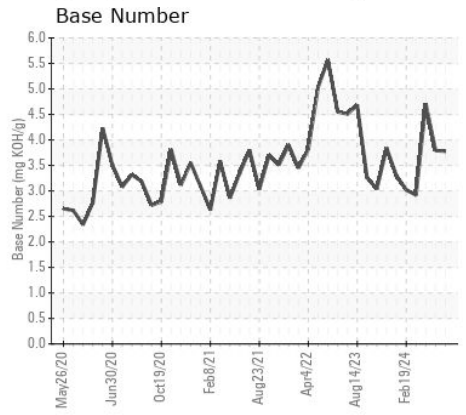
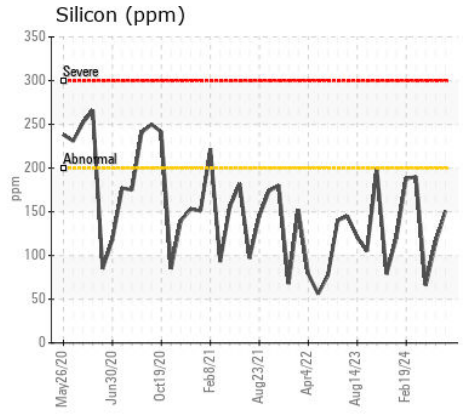
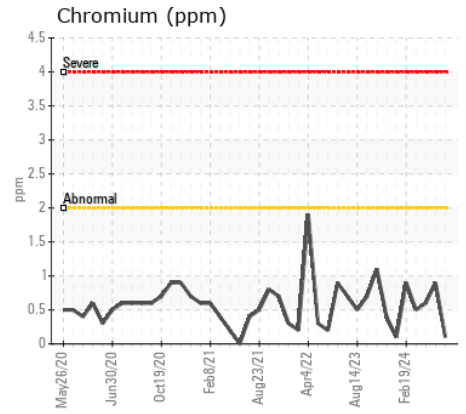
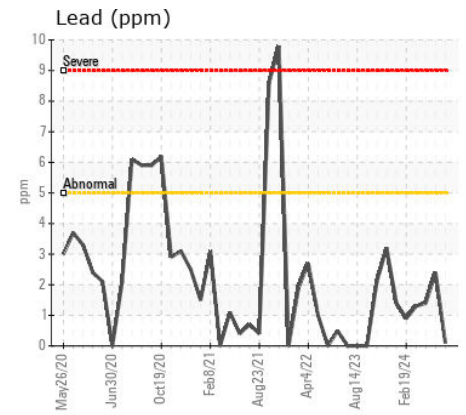
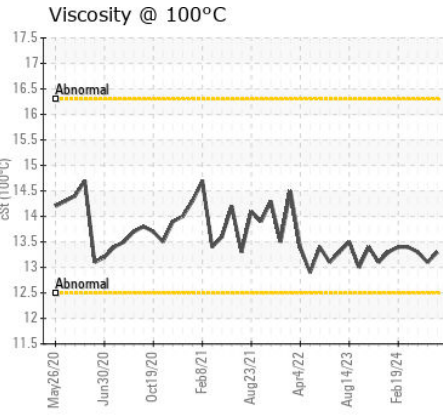
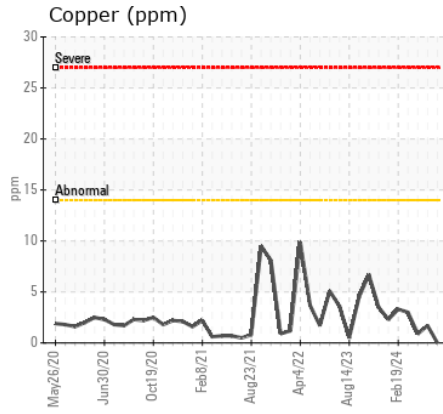
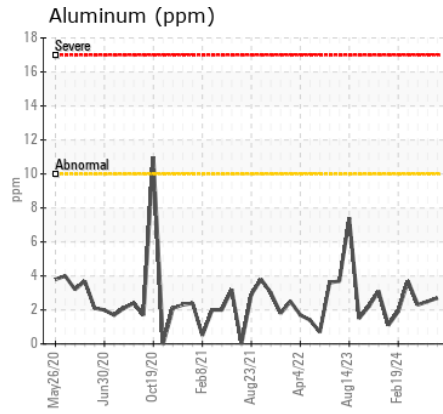
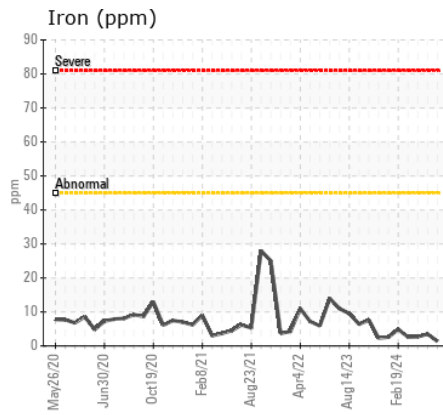
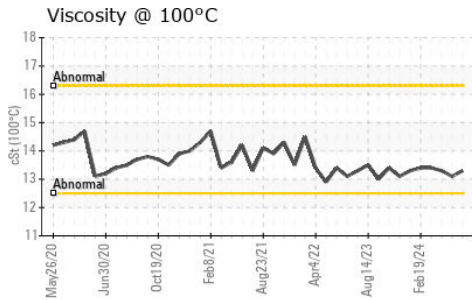
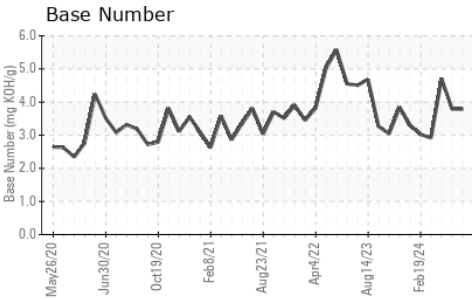
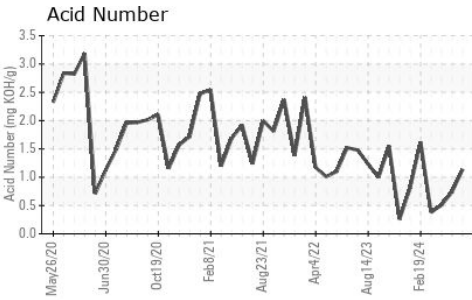
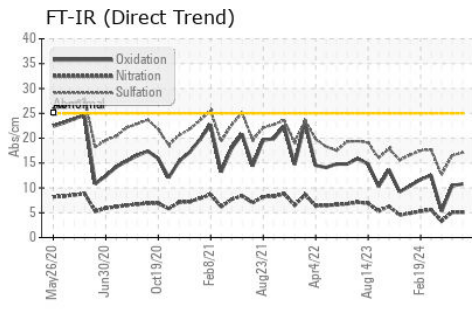
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>200	151	114	66
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	5.1	5.1	3.3
Sulfation	Abs/.1mm	*ASTM D7415	>30	17.1	16.5	12.6
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	<1
Boron	ppm	ASTM D5185m		<1	0	0
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		3	5	4
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		21	20	21
Calcium	ppm	ASTM D5185m		1430	1385	1346
Phosphorus	ppm	ASTM D5185m		365	366	326
Zinc	ppm	ASTM D5185m		446	428	428
Sulfur	ppm	ASTM D5185m		3543	3320	3055
Oxidation	Abs/.1mm	*ASTM D7414	>25	10.8	10.4	5.3
Acid Number (AN)	mg KOH/g	ASTM D8045		1.14	0.74	0.51
Base Number (BN)	mg KOH/g	ASTM D2896		3.78	3.79	4.71
Visc @ 100°C	cSt	ASTM D445		13.3	13.1	13.3



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0909650
Lab Number : 06157093
Unique Number : 10992516
Test Package : MOB 2

Received : 22 Apr 2024
Tested : 23 Apr 2024
Diagnosed : 25 Apr 2024 - Jonathan Hester

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)

BROOME ENERGY
 286 KNAPP ROAD
 BINGHAMTON, NY
 US 13905
 Contact: RUSS MERCER
 BroomeEnergy@gmail.com
 T: (607)766-0358
 F: (607)766-0357