



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	ABNORMAL
FLUID CONDITION	NORMAL



Machine Id
ENG 4B
Component
Right Biogas Engine
Fluid
D-A Lubricant Blue Flame HB-5 40W (110 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		WC0962713	WC0962706	WC0935628
Sample Date		Client Info		15 Jul 2024	08 Jul 2024	24 Jun 2024
Machine Age	hrs	Client Info		917853	91583	91249
Oil Age	hrs	Client Info		1004	834	500
Filter Age	hrs	Client Info		1004	834	500
Oil Changed		Client Info		N/A	N/A	N/A
Filter Changed		Client Info		N/A	N/A	N/A
Sample Status				ABNORMAL	ABNORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>45	12	13	10
Chromium	ppm	ASTM D5185m	>2	2	2	2
Nickel	ppm	ASTM D5185m	>2	<1	<1	1
Titanium	ppm	ASTM D5185m		<1	0	<1
Silver	ppm	ASTM D5185m	>5	0	0	<1
Aluminum	ppm	ASTM D5185m	>10	2	3	2
Lead	ppm	ASTM D5185m	>5	0	2	2
Copper	ppm	ASTM D5185m	>14	7	8	5
Tin	ppm	ASTM D5185m	>13	4	5	3
Vanadium	ppm	ASTM D5185m		0	0	<1
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

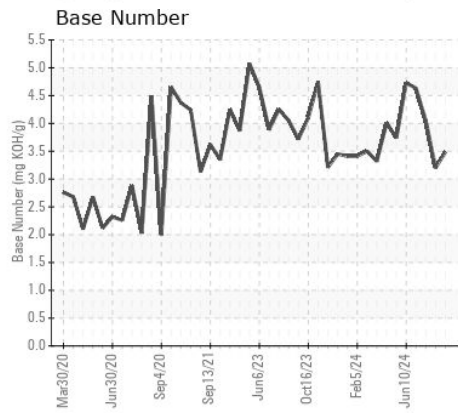
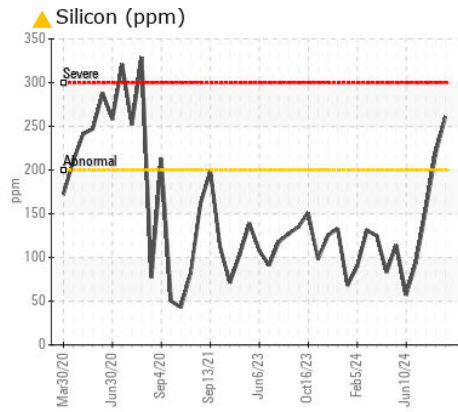
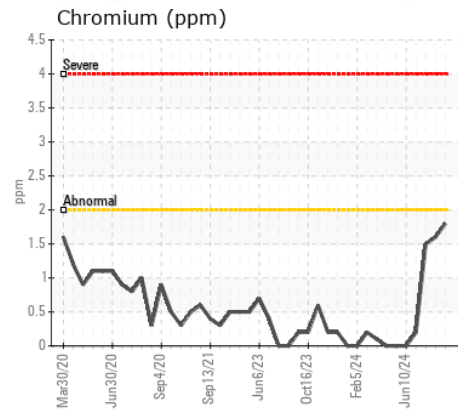
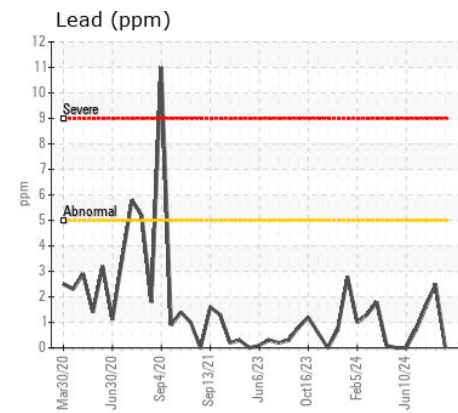
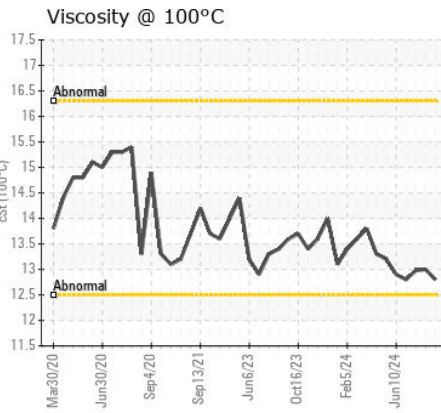
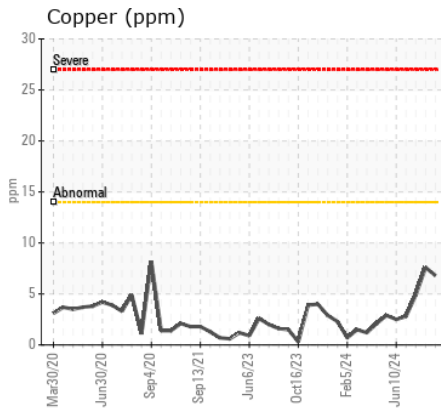
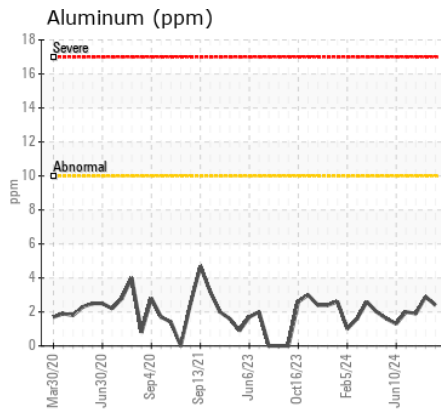
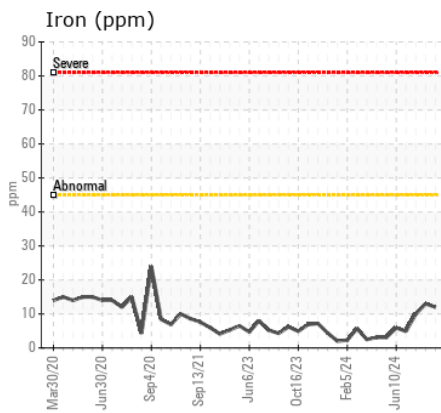
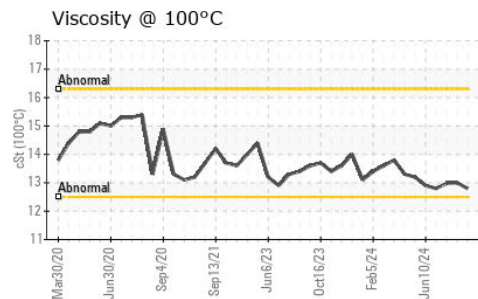
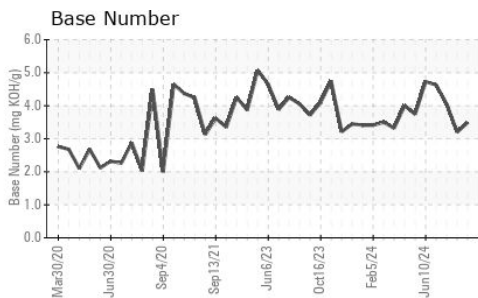
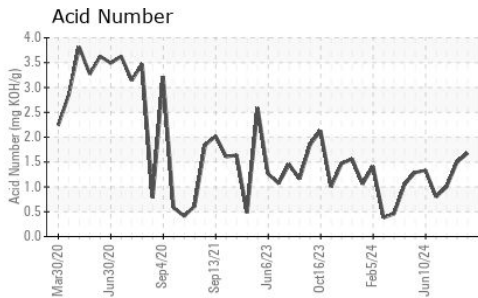
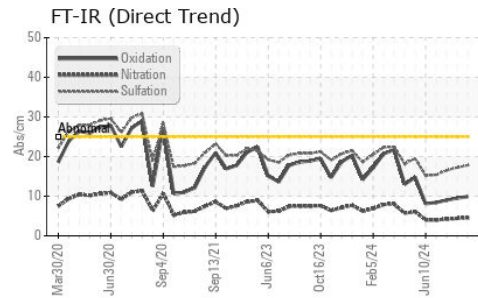
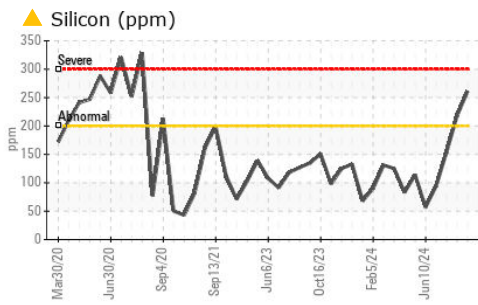
Elemental level of silicon (Si) above normal.

Silicon	ppm	ASTM D5185m	>200	▲ 261	▲ 218	154
Potassium	ppm	ASTM D5185m	>20	0	4	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	4.5	4.4	4.2
Sulfation	Abs/.1mm	*ASTM D7415	>30	17.8	17.2	16.5
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		8	8	4
Boron	ppm	ASTM D5185m		<1	1	<1
Barium	ppm	ASTM D5185m		0	0	1
Molybdenum	ppm	ASTM D5185m		3	4	3
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		14	16	13
Calcium	ppm	ASTM D5185m		1511	1394	1343
Phosphorus	ppm	ASTM D5185m		349	342	314
Zinc	ppm	ASTM D5185m		443	452	414
Sulfur	ppm	ASTM D5185m		3350	3465	2748
Oxidation	Abs/.1mm	*ASTM D7414	>25	9.9	9.5	9.0
Acid Number (AN)	mg KOH/g	ASTM D8045		1.68	1.50	1.00
Base Number (BN)	mg KOH/g	ASTM D2896		3.49	3.20	4.05
Visc @ 100°C	cSt	ASTM D445		12.8	13.0	12.98



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0962713
Lab Number : 06239643
Unique Number : 11128477
Test Package : MOB 2
Received : 17 Jul 2024
Tested : 18 Jul 2024
Diagnosed : 19 Jul 2024 - Sean Felton

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Certificate L2367
 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)