

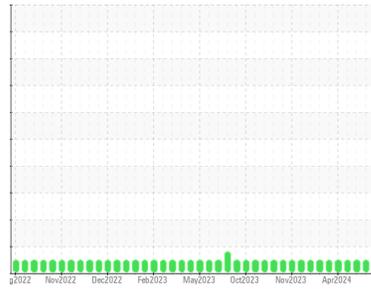


OIL ANALYSIS REPORT



Machine Id
Grand River CAT 1 GRRM01BE
 Component
Biogas Engine
 Fluid
CHEVRON HDAX 9500 GAS ENGINE OIL 40 (90 GAL)

Sample Rating Trend



NORMAL



DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

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.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number	Client Info			WC0934197	WC0934188	WC0724920
Sample Date	Client Info			28 May 2024	17 May 2024	23 Apr 2024
Machine Age	hrs	Client Info		73032	72769	72556
Oil Age	hrs	Client Info		474	211	1420
Oil Changed	Client Info			Not Chngd	Not Chngd	Changed
Sample Status				NORMAL	NORMAL	NORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Fuel	WC Method	>4.0		<1.0	<1.0	<1.0
Water	WC Method	>.11		NEG	NEG	NEG
Glycol	WC Method			NEG	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>15	0	2	5
Chromium	ppm	ASTM D5185m	>4	0	<1	<1
Nickel	ppm	ASTM D5185m		0	<1	<1
Titanium	ppm	ASTM D5185m		0	<1	<1
Silver	ppm	ASTM D5185m		0	<1	0
Aluminum	ppm	ASTM D5185m	>6	1	2	3
Lead	ppm	ASTM D5185m	>9	0	1	3
Copper	ppm	ASTM D5185m	>6	<1	3	3
Tin	ppm	ASTM D5185m	>4	<1	2	2
Vanadium	ppm	ASTM D5185m		0	<1	<1
Cadmium	ppm	ASTM D5185m		0	<1	<1

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		10	14	2
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		2	4	5
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		15	14	25
Calcium	ppm	ASTM D5185m		1733	1682	1897
Phosphorus	ppm	ASTM D5185m		295	302	329
Zinc	ppm	ASTM D5185m		341	343	385
Sulfur	ppm	ASTM D5185m		2013	2168	2375

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>181	27	24	46
Sodium	ppm	ASTM D5185m	>21	<1	0	2
Potassium	ppm	ASTM D5185m	>20	0	3	2

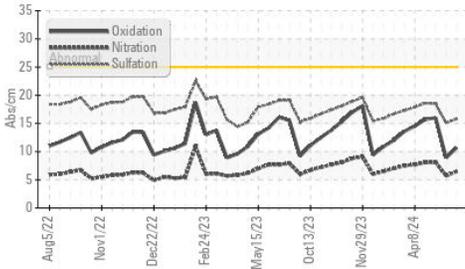
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844		0	0	0.1
Nitration	Abs/cm	*ASTM D7624		6.5	5.7	8.1
Sulfation	Abs/.1mm	*ASTM D7415		15.8	15.1	18.5

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414		10.7	8.9	16.0
Acid Number (AN)	mg KOH/g	ASTM D8045	1.0	1.49	0.24	1.68
Base Number (BN)	mg KOH/g	ASTM D2896	5.4	4.46	4.84	3.91

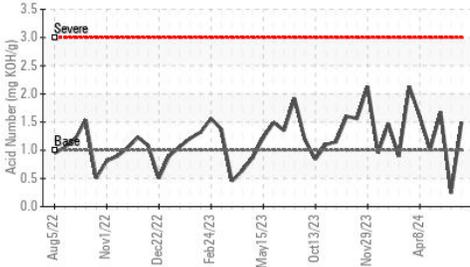


OIL ANALYSIS REPORT

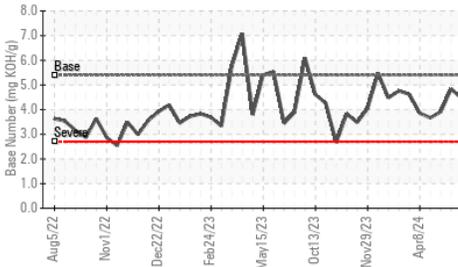
FT-IR (Direct Trend)



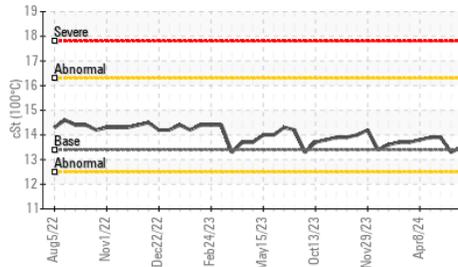
Acid Number



Base Number



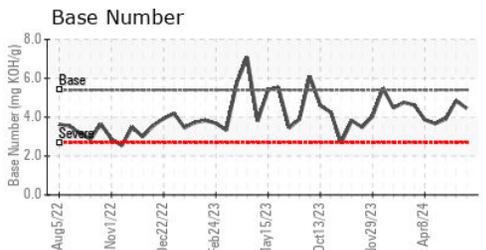
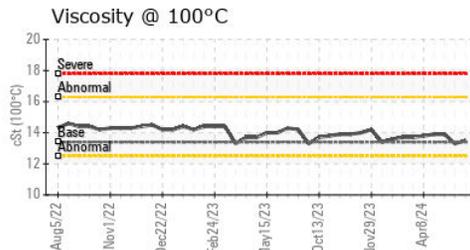
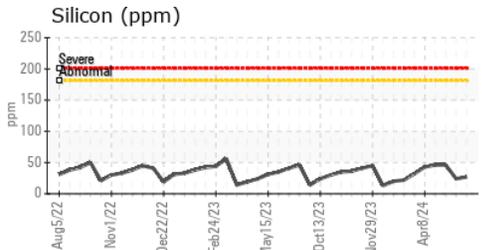
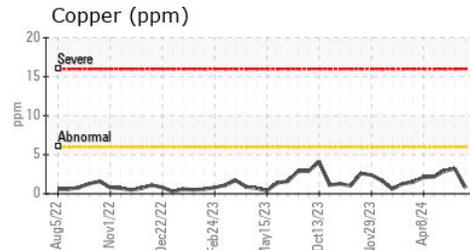
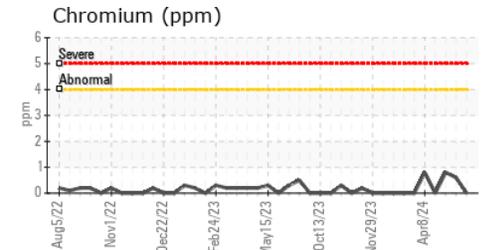
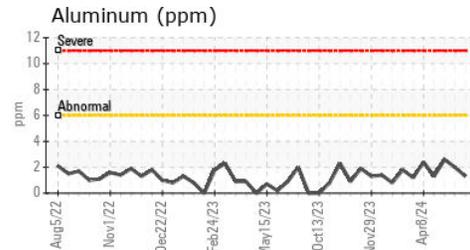
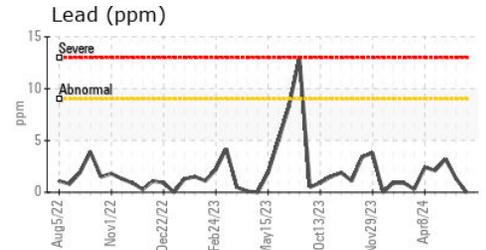
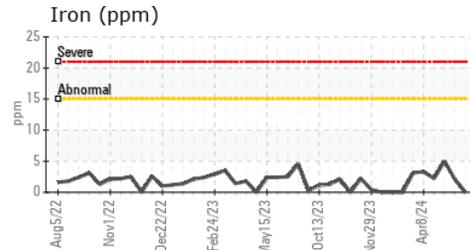
Viscosity @ 100°C



VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>.11	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	13.4	13.5	13.3

GRAPHS



Certificate L2367

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

Sample No. : WC0934197

Lab Number : 06195613

Unique Number : 11057736

Test Package : MOB 2

Received : 30 May 2024

Tested : 31 May 2024

Diagnosed : 01 Jun 2024 - Don Baldrige

EDL NA Recips-Grand River

Grand River Powerstation, 8550 West Grand River Hwy

Grand Ledge, MI

US 48837

Contact: JAMES ALEXANDER

james.alexander@edlenergy.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)