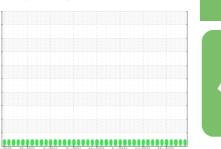


OIL ANALYSIS REPORT

Sample Rating Trend







Grand River CAT 5 GRRM05BE

Component
Biogas Engine

CHEVRON HDAX 6500 LFG GAS ENGINE OIL (--- GAL)

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

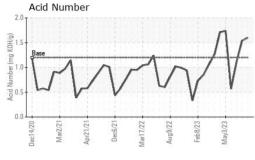
Fluid Condition

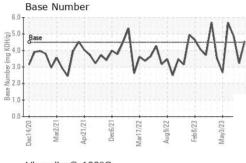
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

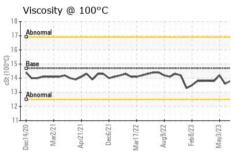
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0724847	WC0724850	WC0724845
Sample Date		Client Info		15 Aug 2023	31 Jul 2023	11 Jul 2023
Machine Age	hrs	Client Info		74338	74014	73601
Oil Age	hrs	Client Info		1205	800	450
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	V	method	limit/base	current	history1	history2
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>15	2	1	1
Chromium	ppm	ASTM D5185m		<1	0	<1
Nickel		ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m	>2	0	0	0
	ppm		. <i>E</i>		0	
Silver Aluminum	ppm	ASTM D5185m	>5	0		0
	ppm	ASTM D5185m		2	<1	<1
Lead	ppm	ASTM D5185m	>9	<1	<1	<1
Copper	ppm	ASTM D5185m		<1	<1	2
Tin	ppm	ASTM D5185m	>4	1	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method				history2
		momod	mmi bacc	Current	Thistory	
Boron	ppm	ASTM D5185m	mme bass	2	0	1
	ppm					
Boron		ASTM D5185m	mm, base	2	0	1
Boron Barium	ppm	ASTM D5185m ASTM D5185m		2 0	0	1 2
Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m ASTM D5185m		2 0 <1	0 0 1	1 2 2
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		2 0 <1 <1	0 0 1 <1	1 2 2 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		2 0 <1 <1 13	0 0 1 <1 6	1 2 2 <1 14
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		2 0 <1 <1 13 1884	0 0 1 <1 6 1786	1 2 2 <1 14 1845
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		2 0 <1 <1 13 1884 288	0 0 1 <1 6 1786 264	1 2 2 <1 14 1845 292
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	2 0 <1 <1 13 1884 288 357	0 0 1 <1 6 1786 264 337	1 2 2 <1 14 1845 292 352
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	2 0 <1 <1 13 1884 288 357 2222	0 0 1 <1 6 1786 264 337 1990	1 2 2 2 < 1 14 1845 292 352 2204
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base	2 0 <1 <1 13 1884 288 357 2222 current	0 0 1 <1 6 1786 264 337 1990	1 2 2 2 <1 14 1845 292 352 2204 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base >181	2 0 <1 <1 13 1884 288 357 2222 current	0 0 1 <1 6 1786 264 337 1990 history1	1 2 2 2 1 14 1845 292 352 2204 history2 25
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base >181	2 0 <1 <1 13 1884 288 357 2222 current 47	0 0 1 <1 6 1786 264 337 1990 history1 31	1 2 2 2 1 14 1845 292 352 2204 history2 25 17
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base >181 >20	2 0 <1 <1 13 1884 288 357 2222 current 47 <1	0 0 1 <1 6 1786 264 337 1990 history1 31 0	1 2 2 2 1 14 1845 292 352 2204 history2 25 17 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base >181 >20 limit/base	2 0 <1 <1 13 1884 288 357 2222 current 47 <1 0	0 0 1 <1 6 1786 264 337 1990 history1 31 0 1 history1 0.1	1 2 2 2 1 14 1845 292 352 2204 history2 25 17 2 0.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base >181 >20 limit/base	2 0 <1 <1 13 1884 288 357 2222 current 47 <1 0	0 0 1 <1 6 1786 264 337 1990 history1 31 0 1	1 2 2 2 1 14 1845 292 352 2204 history2 25 17 2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base >181 >20 limit/base >20	2 0 <1 <1 13 1884 288 357 2222 current 47 <1 0 current 0 7.9	0 0 1 <1 6 1786 264 337 1990 history1 31 0 1 history1 0.1 7.3	1 2 2 2 1 14 1845 292 352 2204 history2 25 17 2 history2 0.1 7.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m Method *ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method *ASTM D7844 *ASTM D7624 *ASTM D7415 Method	limit/base >181 >20 limit/base >20 >30 limit/base	2 0 <1 <1 13 1884 288 357 2222 current 47 <1 0 current 0 7.9 17.3	0 0 1 <1 6 1786 264 337 1990 history1 31 0 1 history1 0.1 7.3 16.3 history1	1 2 2 2 <1 14 1845 292 352 2204 history2 25 17 2 history2 0.1 7.1 16.3 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA Oxidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method *ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m method *ASTM D7844 *ASTM D7624 *ASTM D7415 method *ASTM D7414	limit/base >181 >20 limit/base >20 >30 limit/base >25	2 0 <1 13 1884 288 357 2222 current 47 <1 0 current 0 7.9 17.3 current 13.8	0 0 1 <1 6 1786 264 337 1990 history1 31 0 1 history1 0.1 7.3 16.3 history1 11.1	1 2 2 2 1 14 1845 292 352 2204 history2 25 17 2 0.1 7.1 16.3 history2 10.7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method *ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m method *ASTM D7844 *ASTM D7624 *ASTM D7415 method *ASTM D7414	limit/base >181 >20 limit/base >20 >30 limit/base	2 0 <1 <1 13 1884 288 357 2222 current 47 <1 0 current 0 7.9 17.3	0 0 1 <1 6 1786 264 337 1990 history1 31 0 1 history1 0.1 7.3 16.3 history1	1 2 2 2 <1 14 1845 292 352 2204 history2 25 17 2 history2 0.1 7.1 16.3 history2



OIL ANALYSIS REPORT



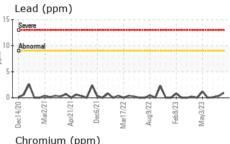


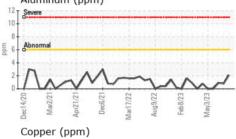


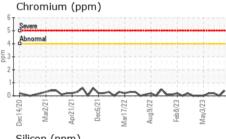
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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
Free Water	scalar	*Visual		NEG	NEG	NEG

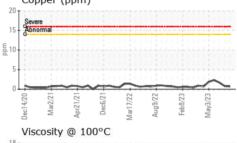
LLUID PHOPER	THES	memod			riistory i	History
Visc @ 100°C	cSt	ASTM D445	14.7	14.1	14.0	13.8

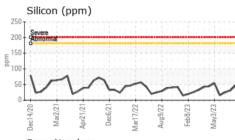
Seve					+++			-
Abn	ormal					****		-
			~		بإزار	بالأبال		
ĽΩ		\sim			<u> </u>	\-	~	_
Jec14/20	Mar2/2	Apr21/21	Dec6/21	17/22	Aug9/22	Feb 8/23	May3/23	
Dec	Š	Apr	De	Mar17/	Aug	골	Ma	
۸۱	minu	m (pp	m)					

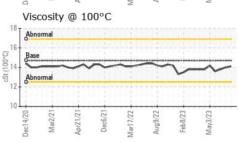


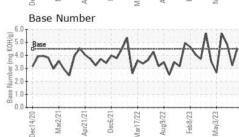
















Certificate L2367

Laboratory Sample No. Lab Number **Unique Number** Test Package : MOB 2

: WC0724847 : 05927415 : 10607362

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 17 Aug 2023 Diagnosed Diagnostician

: 18 Aug 2023 : Angela Borella **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

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)

T:

F: