

OIL ANALYSIS REPORT

Sample Rating Trend





Brent Run CAT 3 BRRM03BE

Component **Biogas Engine**

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

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. (Customer Sample Comment: 400 hour oil sample)

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

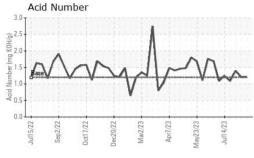
Fluid Condition

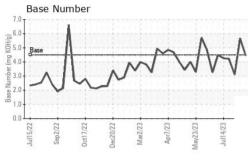
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

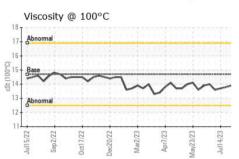
OAMBLE INFORM	AATION		11 1. //			11.
SAMPLE INFORM	JATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0776745	WC0776849	WC0776845
Sample Date		Client Info		17 Aug 2023	08 Aug 2023	01 Aug 2023
Machine Age	hrs	Client Info		93543	93543	45414
Oil Age	hrs	Client Info		402	166	876
Oil Changed		Client Info		Not Changd	Not Changd	Changed
Sample Status				NORMAL	NORMAL	SEVERE
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	3	5	5
Chromium	ppm	ASTM D5185m	>4	<1	0	<1
Nickel	ppm	ASTM D5185m	>2	<1	<1	<1
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5185m	>6	3	3	4
Lead	ppm	ASTM D5185m	>9	<1	<1	<1
Copper	ppm	ASTM D5185m	>6	1	<1	2
Tin	ppm	ASTM D5185m	>4	3	3	6
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method			history1	history2
	nnm		limit/base		history1	history2
Boron	ppm	ASTM D5185m	limit/base	0	2	1
Boron Barium	ppm	ASTM D5185m ASTM D5185m	limit/base	0 0	2	1
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 2	2 0 2	1 0 3
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 2 <1	2 0 2 <1	1 0 3 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 2 <1 11	2 0 2 <1 15	1 0 3 <1 14
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 2 <1 11 1927	2 0 2 <1 15 1870	1 0 3 <1 14 2822
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	limit/base	0 0 2 <1 11 1927 278	2 0 2 <1 15 1870 294	1 0 3 <1 14 2822 396
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 2 <1 11 1927 278 356	2 0 2 <1 15 1870 294 341	1 0 3 <1 14 2822 396 509
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	0 0 2 <1 11 1927 278	2 0 2 <1 15 1870 294	1 0 3 <1 14 2822 396 509 4019
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base	0 0 2 <1 11 1927 278 356 2922 current	2 0 2 <1 15 1870 294 341 3143 history1	1 0 3 <1 14 2822 396 509 4019
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base	0 0 2 <1 11 1927 278 356 2922	2 0 2 <1 15 1870 294 341 3143	1 0 3 <1 14 2822 396 509 4019 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base	0 0 2 <1 11 1927 278 356 2922 current	2 0 2 <1 15 1870 294 341 3143 history1	1 0 3 <1 14 2822 396 509 4019 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base >181	0 0 2 <1 11 1927 278 356 2922 current	2 0 2 <1 15 1870 294 341 3143 history1	1 0 3 <1 14 2822 396 509 4019 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base >181	0 0 2 <1 11 1927 278 356 2922 current 169 0	2 0 2 <1 15 1870 294 341 3143 history1	1 0 3 <1 14 2822 396 509 4019 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base >181 >20	0 0 2 <1 11 1927 278 356 2922 current 169 0 2	2 0 2 <1 15 1870 294 341 3143 history1 127 2	1 0 3 <1 14 2822 396 509 4019 history2 276 1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base >181 >20 limit/base	0 0 2 <1 11 1927 278 356 2922 current 169 0 2 current	2 0 2 <1 15 1870 294 341 3143 history1 127 2 2	1 0 3 <1 14 2822 396 509 4019 history2 276 1 2
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 ASTM D5185m ASTM D5185m	limit/base >181 >20 limit/base	0 0 2 <1 11 1927 278 356 2922 current 169 0 2 current 0	2 0 2 <1 15 1870 294 341 3143 history1 127 2 2 history1	1 0 3 <1 14 2822 396 509 4019 history2 276 1 2 history2 0
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 ASTM D5185m ASTM D5185m	limit/base >181 >20 limit/base >20	0 0 2 <1 11 1927 278 356 2922 current 169 0 2 current 0 6.3	2 0 2 <1 15 1870 294 341 3143 history1 127 2 2 history1 0 6.1	1 0 3 <1 14 2822 396 509 4019 history2 276 1 2 history2 0 6.5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm	ASTM D5185m Method ASTM D5185m 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	0 0 2 <1 11 1927 278 356 2922 current 169 0 2 current 0 6.3 20.9 current	2 0 2 <1 15 1870 294 341 3143 history1 127 2 2 history1 0 6.1 19.8 history1	1 0 3 <1 14 2822 396 509 4019 history2 276 1 2 history2 0 6.5 22.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA Oxidation	ppm	ASTM D5185m Method *ASTM D5185m ASTM D5185m 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	0 0 2 <1 11 1927 278 356 2922 current 169 0 2 current 0 6.3 20.9 current 13.0	2 0 2 <1 15 1870 294 341 3143 history1 127 2 2 history1 0 6.1 19.8 history1 12.3	1 0 3 <1 14 2822 396 509 4019 history2 276 1 2 history2 0 6.5 22.1 history2 14.9
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm	ASTM D5185m Method ASTM D5185m 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	0 0 2 <1 11 1927 278 356 2922 current 169 0 2 current 0 6.3 20.9 current	2 0 2 <1 15 1870 294 341 3143 history1 127 2 2 history1 0 6.1 19.8 history1	1 0 3 <1 14 2822 396 509 4019 history2 276 1 2 history2 0 6.5 22.1



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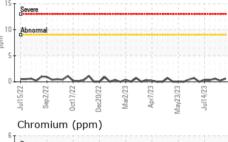


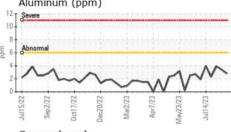
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

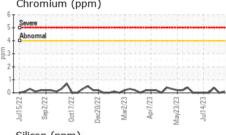
FLUID PROPER	THES	method			riistory i	nistory∠
Visc @ 100°C	cSt	ASTM D445	14.7	13.7	13.3	13.9

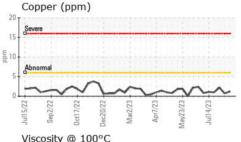
Lead (ppm)

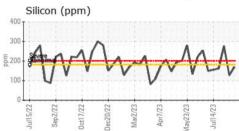
Seve	re							
Abno	ormal							
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Jul15,22	Sep2/22	Oct17/22	1 22/0	Mar2/23 - \$	Apr7/23	May23/23 -	Jul14/23	1

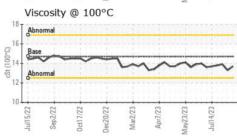


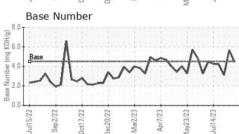
















Certificate L2367

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

: WC0776745 : 05929857 : 10615128

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

: 21 Aug 2023 : 22 Aug 2023 Diagnostician : Sean Felton

EDL NA Recips-Brent Run

Brent Run Power Station, 8383 Vienna Road Montrose, MI

US 48457-9141 Contact: Jenna Hiltz

Jenna.Hiltz@edlenergy.com

T:

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)

Report Id: EDLMON [WUSCAR] 05929857 (Generated: 08/22/2023 15:35:21) Rev: 1

Submitted By: DOUG HINE

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