

OIL ANALYSIS REPORT

Sample Rating Trend





Brent Run CAT 1 BRRM01BE

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

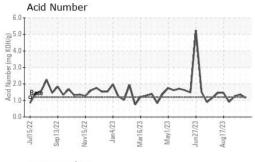
Fluid Condition

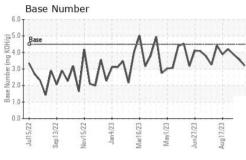
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

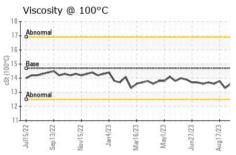
		<u></u> _				
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0776774	WC0663708	WC0663716
Sample Date		Client Info		12 Oct 2023	21 Sep 2023	13 Sep 2023
Machine Age	hrs	Client Info		38273	37817	37633
Oil Age	hrs	Client Info		284	561	377
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				NORMAL	SEVERE	ABNORMAL
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	1	5	6
Chromium	ppm	ASTM D5185m	>4	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	<1	2	<1
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5185m	>6	2	3	<1
Lead	ppm	ASTM D5185m	>9	<1	<1	<1
Copper	ppm	ASTM D5185m	>6	0	3	3
Tin	ppm	ASTM D5185m	>4	3	4	4
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		<1	0	0
ADDITIVEC						
ADDITIVES		method				history2
Boron	ppm	method ASTM D5185m	limit/base	current 1	history1 0	history2 0
	ppm		limit/base			
Boron		ASTM D5185m	limit/base	1	0	0
Boron Barium	ppm	ASTM D5185m ASTM D5185m	limit/base	1 3	0	0
Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	1 3 <1	0 1 0	0 0 1
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	1 3 <1 0	0 1 0 <1	0 0 1 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	1 3 <1 0 16	0 1 0 <1 7	0 0 1 <1 5
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	1 3 <1 0 16 1817	0 1 0 <1 7 1895	0 0 1 <1 5 1961
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	1 3 <1 0 16 1817 291	0 1 0 <1 7 1895 265	0 0 1 <1 5 1961 284
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	1 3 <1 0 16 1817 291 369	0 1 0 <1 7 1895 265 340	0 0 1 <1 5 1961 284 333
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m		1 3 <1 0 16 1817 291 369 2913	0 1 0 <1 7 1895 265 340 2561	0 0 1 <1 5 1961 284 333 3088
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base	1 3 <1 0 16 1817 291 369 2913	0 1 0 <1 7 1895 265 340 2561 history1	0 0 1 <1 5 1961 284 333 3088 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base	1 3 <1 0 16 1817 291 369 2913 current	0 1 0 <1 7 1895 265 340 2561 history1	0 0 1 <1 5 1961 284 333 3088 history2 ▲ 196
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	1 3 <1 0 16 1817 291 369 2913 current 142 <1	0 1 0 <1 7 1895 265 340 2561 history1 209 0	0 0 1 <1 5 1961 284 333 3088 history2 ▲ 196
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	1 3 <1 0 16 1817 291 369 2913 current 142 <1	0 1 0 <1 7 1895 265 340 2561 history1 209 0 1	0 0 1 <1 5 1961 284 333 3088 history2 ▲ 196 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	ASTM D5185m	limit/base >181 >20 limit/base	1 3 <1 0 16 1817 291 369 2913 current 142 <1 2	0 1 0 <1 7 1895 265 340 2561 history1 1 0 1 1 0 1 1 0 1 1 1 1 1 1 1 1 1 1	0 0 1 <1 5 1961 284 333 3088 history2 ▲ 196 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	limit/base >181 >20 limit/base >20	1 3 <1 0 16 1817 291 369 2913 current 142 <1 2 current 0.1	0 1 0 <1 7 1895 265 340 2561 history1 ● 209 0 1 history1	0 0 1 <1 5 1961 284 333 3088 history2 ▲ 196 1 1 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 ASTM D5185m	limit/base >181 >20 limit/base >20	1 3 <1 0 16 1817 291 369 2913 current 142 <1 2 current 0.1 5.7	0 1 0 <1 7 1895 265 340 2561 history1 ◆ 209 0 1 history1 0 6.2	0 0 1 <1 5 1961 284 333 3088 history2 ▲ 196 1 1 history2 0.1 6.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m Method ASTM D5185m Method *ASTM D7844 *ASTM D7624 *ASTM D76145	limit/base >181 >20 limit/base >20 >30	1 3 <1 0 16 1817 291 369 2913 current 142 <1 2 current 0.1 5.7 20.7	0 1 0 <1 7 1895 265 340 2561 history1 ● 209 0 1 history1 0 6.2 21.8	0 0 1 <1 5 1961 284 333 3088 history2 ▲ 196 1 1 history2 0.1 6.1 20.9
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 method *ASTM D7844 *ASTM D7624 *ASTM D7415 method *ASTM D7414	limit/base >181 >20 limit/base >20 >30 limit/base	1 3 <1 0 16 1817 291 369 2913 current 142 <1 2 current 0.1 5.7 20.7 current	0 1 0 <1 7 1895 265 340 2561 history1	0 0 1 <1 5 1961 284 333 3088 history2 ▲ 196 1 1 history2 0.1 6.1 20.9 history2



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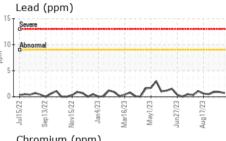


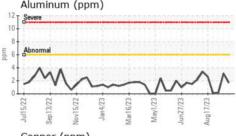


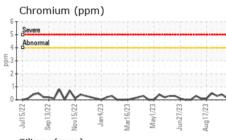
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

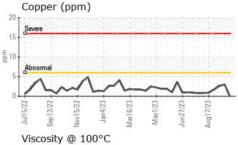
FLUID PROPER	THES	method	ilmit/base		nistory i	nistoryz
Visc @ 100°C	cSt	ASTM D445	14.7	13.7	13.8	13.6

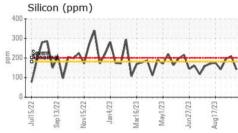
Seve	ere							
1.2	ormal							-
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	Sep13/22	Nov15/22 -	Jan4/23	Mar16/23	May1/23	Jun27/23	Aug17/23	1

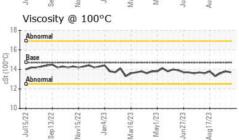


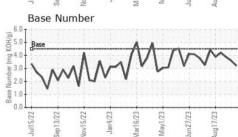
















Certificate L2367

Laboratory Sample No. Lab Number

Unique Number Test Package : MOB 2

: WC0776774 : 05982003

: 10699298

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

: 19 Oct 2023 : Sean Felton

EDL NA Recips-Brent Run Brent Run Power Station, 8383 Vienna Road

Montrose, MI US 48457-9141

Contact: Rob Stewart Rob.Stewart@energydevelopments.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)

Report Id: EDLMON [WUSCAR] 05982003 (Generated: 10/23/2023 02:43:26) Rev: 1

Submitted By: DOUG HINE

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