

OIL ANALYSIS REPORT

Sample Rating Trend







Brent Run CAT 1 BRRM01BE

Biogas Engine

CHEVRON HDAX 9500 GAS ENGINE OIL 40 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. (Customer Sample Comment: 400 hour sample after scraping 7 cylinders)

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

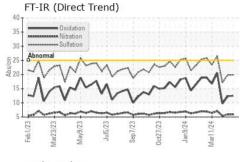
Fluid Condition

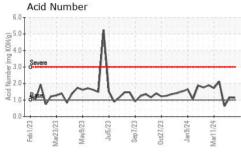
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

Sample Number Client Info WC0915822 WC0915827 WC0776764 Sample Date Client Info 19 Apr 2024 10 Apr 2024 01 Apr 2024 02 Apr	ENGINE OIL 40 (-	GAL)	72020 111020		out to the total out to		
Sample Date Client Info 19 Apr 2024 10 Apr 2024 01 Apr 2024 01 Apr 2024 42 Apr 2024 01 Apr 2024 42 Apr 2024 01 Apr 2024 42 Apr 2024 01 Apr 2024 02 Apr 2024 42201 02 Apr 2024 4201 02 Apr 2024	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Date Client Info 19 Apr 2024 10 Apr 2024 01 Apr 2024 Machine Age hrs Client Info 42596 42387 42201 4201 Molt Changed hrs Client Info 395 186 892 Molt Changed Not Changed Not Changed Not Changed North	Sample Number		Client Info		WC0915822	WC0915827	WC0776764
Machine Age hrs Client Info 42596 42387 42201			Client Info		19 Apr 2024	10 Apr 2024	01 Apr 2024
Oil Age hrs Client Info 395 186 892 Oil Changed Satus Client Info Not Changd Not Changd Not Changed Not	•	hrs	Client Info		-		
Contained Client Info Not Changed Northanger Not Changed Northanger N		hrs	Client Info		395	186	892
NORMAL ABNORMAL NORMAL CONTAMINATION method limit/base current history1 history2 history2	J .						
Fuel	-				•		_
Water WC Method NEG NEG <t< td=""><td>CONTAMINATION</td><td>1</td><td>method</td><td>limit/base</td><th>current</th><td>history1</td><td>history2</td></t<>	CONTAMINATION	1	method	limit/base	current	history1	history2
Select	Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >14 0 <1	Water		WC Method		NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >3 <1 <1 0 Nickel ppm ASTM D5185m 0 <1 0 Titanium ppm ASTM D5185m 0 <1 <1 Silver ppm ASTM D5185m 0 0 0 0 Aluminum ppm ASTM D5185m 5 2 2 1 <1 Aluminum ppm ASTM D5185m >5 2 2 1 <1 Lead ppm ASTM D5185m >5 0 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel	ron	ppm	ASTM D5185m	>14	0	<1	<1
Description	Chromium	ppm	ASTM D5185m	>3	<1	<1	0
Silver	Nickel	ppm	ASTM D5185m		0	<1	0
Aluminum	Titanium	ppm	ASTM D5185m		0	<1	<1
Lead ppm ASTM D5185m >8 <1 2 0 Copper ppm ASTM D5185m >5 0 <1 <1 Tin ppm ASTM D5185m >3 2 3 <1 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 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m <1 3 2 Manganese ppm ASTM D5185m <1 <1 0 Magnesium ppm ASTM D5185m 9 6 5 Calcium ppm ASTM D5185m 278 313 238 Zinc ppm ASTM D5185m 26	Silver	ppm	ASTM D5185m		0	0	0
Lead ppm ASTM D5185m >8 <1 2 0 Copper ppm ASTM D5185m >5 0 <1 <1 Tin ppm ASTM D5185m >3 2 3 <1 Vanadium ppm ASTM D5185m 0 <1 <1 Cadmium ppm ASTM D5185m 0 <1 <1 Cadmium ppm ASTM D5185m 2 2 3 Barium ppm ASTM D5185m 0 0 0 Barium ppm ASTM D5185m 0 0 0 Malganese ppm ASTM D5185m <1 <1 0 Magnesium ppm ASTM D5185m 9 6 5 Calcium ppm ASTM D5185m 1747 1812 1576 Phosphorus ppm ASTM D5185m 278 313 238 Zinc ppm ASTM D5185m 2683 2940 2339	Aluminum		ASTM D5185m	>5	2	2	1
Copper ppm ASTM D5185m >5 0 <1 <1 Tin ppm ASTM D5185m >3 2 ▲ 3 <1	Lead					2	0
Tin	Copper					<1	<1
Vanadium ppm ASTM D5185m 0 <1 <1 Cadmium ppm ASTM D5185m 0 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2 2 3 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m <1 3 2 Manganese ppm ASTM D5185m <1 <1 0 0 Magnesium ppm ASTM D5185m 9 6 5 5 Calcium ppm ASTM D5185m 1747 1812 1576 1576 Phosphorus ppm ASTM D5185m 278 313 238 238 238 238 238 239 200 2339 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m <th< td=""><td></td><td></td><td></td><td></td><th></th><td></td><td></td></th<>							
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Boron							
Barium	ADDITIVES		method	limit/base	current	history1	history2
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Manganese ppm ASTM D5185m <1 <1 0 Magnesium ppm ASTM D5185m 9 6 5 Calcium ppm ASTM D5185m 1747 1812 1576 Phosphorus ppm ASTM D5185m 278 313 238 Zinc ppm ASTM D5185m 334 351 290 Sulfur ppm ASTM D5185m 2683 2940 2339 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 <1	Barium	ppm	ASTM D5185m		0	0	0
Magnesium ppm ASTM D5185m 9 6 5 Calcium ppm ASTM D5185m 1747 1812 1576 Phosphorus ppm ASTM D5185m 278 313 238 Zinc ppm ASTM D5185m 334 351 290 Sulfur ppm ASTM D5185m 2683 2940 2339 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >180 108 101 59 Sodium ppm ASTM D5185m >20 <1	Molybdenum	ppm	ASTM D5185m		<1	3	2
Magnesium ppm ASTM D5185m 9 6 5 Calcium ppm ASTM D5185m 1747 1812 1576 Phosphorus ppm ASTM D5185m 278 313 238 Zinc ppm ASTM D5185m 334 351 290 Sulfur ppm ASTM D5185m 2683 2940 2339 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >180 108 101 59 Sodium ppm ASTM D5185m >20 <1	Manganese	ppm	ASTM D5185m		<1	<1	0
Calcium ppm ASTM D5185m 1747 1812 1576 Phosphorus ppm ASTM D5185m 278 313 238 Zinc ppm ASTM D5185m 334 351 290 Sulfur ppm ASTM D5185m 2683 2940 2339 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >108 101 59 Sodium ppm ASTM D5185m >20 <1	-	ppm	ASTM D5185m		9	6	5
Phosphorus ppm ASTM D5185m 278 313 238 Zinc ppm ASTM D5185m 334 351 290 Sulfur ppm ASTM D5185m 2683 2940 2339 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >180 108 101 59 Sodium ppm ASTM D5185m >20 <1	Calcium		ASTM D5185m		1747	1812	1576
Zinc ppm ASTM D5185m 2683 2940 2339	Phosphorus				278	313	238
Sulfur ppm ASTM D5185m 2683 2940 2339 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >180 108 101 59 Sodium ppm ASTM D5185m >20 <1			ASTM D5185m				
Silicon ppm ASTM D5185m >180 108 101 59 Sodium ppm ASTM D5185m >20 <1 <1 3 Potassium ppm ASTM D5185m >20 <1 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0 Nitration Abs/cm *ASTM D7624 5.9 5.9 5.4 Sulfation Abs/.1mm *ASTM D7415 19.9 19.8 17.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 12.5 12.3 9.7 Acid Number (AN) mg KOH/g ASTM D8045 1.0 1.13 1.16 0.63							
Sodium ppm ASTM D5185m >20 <1	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 <1 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0 Nitration Abs/cm *ASTM D7624 5.9 5.9 5.4 Sulfation Abs/.1mm *ASTM D7415 19.9 19.8 17.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 12.5 12.3 9.7 Acid Number (AN) mg KOH/g ASTM D8045 1.0 1.13 1.16 0.63	Silicon	ppm	ASTM D5185m	>180	108	101	59
Potassium ppm ASTM D5185m >20 <1 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0 Nitration Abs/cm *ASTM D7624 5.9 5.9 5.4 Sulfation Abs/.1mm *ASTM D7415 19.9 19.8 17.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 12.5 12.3 9.7 Acid Number (AN) mg KOH/g ASTM D8045 1.0 1.13 1.16 0.63	Sodium	ppm	ASTM D5185m	>20	<1	<1	3
Soot % *ASTM D7844 0.1 0.1 0 Nitration Abs/cm *ASTM D7624 5.9 5.9 5.4 Sulfation Abs/.1mm *ASTM D7415 19.9 19.8 17.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 12.5 12.3 9.7 Acid Number (AN) mg KOH/g ASTM D8045 1.0 1.13 1.16 0.63	Potassium	ppm	ASTM D5185m	>20	<1	3	0
Nitration Abs/cm *ASTM D7624 5.9 5.9 5.4 Sulfation Abs/.1mm *ASTM D7415 19.9 19.8 17.1 FLUID DEGRADATION method limit/base current mistory1 history2 Oxidation Abs/.1mm *ASTM D7414 12.5 12.3 9.7 Acid Number (AN) mg KOH/g ASTM D8045 1.0 1.13 1.16 0.63	INFRA-RED		method	limit/base	current	history1	history2
Nitration Abs/cm *ASTM D7624 5.9 5.9 5.4 Sulfation Abs/.1mm *ASTM D7615 19.9 19.8 17.1 FLUID DEGRADATION method limit/base current mistory1 history1 history2 Oxidation Abs/.1mm *ASTM D7414 12.5 12.3 9.7 Acid Number (AN) mg KOH/g ASTM D8045 1.0 1.13 1.16 0.63	Soot %	%	*ASTM D7844		0.1	0.1	0
Sulfation Abs/.1mm *ASTM D7415 19.9 19.8 17.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 12.5 12.3 9.7 Acid Number (AN) mg KOH/g ASTM D8045 1.0 1.13 1.16 0.63	Nitration	Abs/cm	*ASTM D7624			5.9	5.4
Oxidation Abs/.1mm *ASTM D7414 12.5 12.3 9.7 Acid Number (AN) mg KOH/g ASTM D8045 1.0 1.13 1.16 0.63		Abs/.1mm			19.9		17.1
Acid Number (AN) mg KOH/g ASTM D8045 1.0 1.13 1.16 0.63	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Acid Number (AN) mg KOH/g ASTM D8045 1.0 1.13 1.16 0.63	Oxidation	Abs/.1mm	*ASTM D7414		12.5	12.3	9.7
		mg KOH/a	ASTM D8045	1.0		1.16	0.63

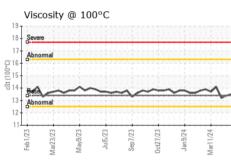


OIL ANALYSIS REPORT





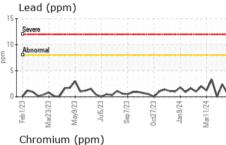


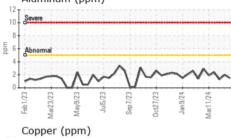


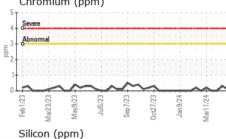
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

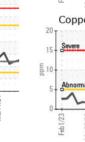
FLUID PROPER	HES	method			history1	history2
Visc @ 100°C	cSt	ASTM D445	13.4	13.5	13.4	13.2

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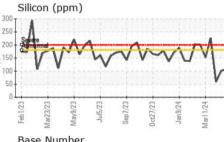


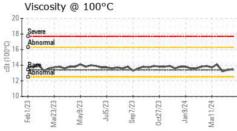


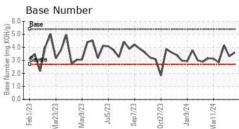
















Laboratory Sample No.

Lab Number : 06157833

: WC0915822 Unique Number : 10993256

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

: 23 Apr 2024 **Tested** : 24 Apr 2024 Diagnosed : 25 Apr 2024 - Don Baldridge

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

US 48457-9141 Contact: Rob Stewart Rob.Stewart@energydevelopments.com

Test Package : MOB 2 Certificate 12367 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:

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