

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id **Grand Blanc CAT 5 GBLM05B**

Component **Biogas Engine**

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

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. (Customer Sample Comment: 200 hour oil sample after fluid and filter change.)

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			
S ENGINE OIL 40 (GAL)	12023 Mar2023	Apr2023 Jun2023 Aug202:	3 Sep2023 Nov2023 Ja	an2024
T 5 GBLM05BE				
OIO III OIII				
JIJ NEPUN I				

			IIIIII/Dase	Current	Thistory	•
Sample Number		Client Info		WC0905745	WC0905734	WC0905680
Sample Date		Client Info		25 Mar 2024	07 Mar 2024	26 Feb 2024
Machine Age	hrs	Client Info		59436	59037	58865
Oil Age	hrs	Client Info		190	390	218
Oil Changed		Client Info		Changed	Not Changd	Not Changd
Sample Status				NORMAL	ABNORMAL	NORMAL
CONTAMINATION	١	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
						2
Iron	ppm		>15	1	4	
Chromium	ppm	ASTM D5185m	>4	0	0	0
Nickel	ppm	ASTM D5185m		0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m		2	2	1
Lead	ppm	ASTM D5185m	>9	0	3	2
Copper	ppm	ASTM D5185m	>6	<1	<1	0
Tin	ppm	ASTM D5185m	>4	0	1	2
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method				history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 6	history1 4	history2 5
	ppm		limit/base			
Boron	ppm	ASTM D5185m	limit/base	6	4	5
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m	limit/base	6 0 2	4	5 0
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	6 0 2 0	4 0 3	5 0 2
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	6 0 2 0 9	4 0 3 0 26	5 0 2 0 15
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	6 0 2 0 9 1670	4 0 3 0 26 1976	5 0 2 0 15 1872
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	6 0 2 0 9 1670 236	4 0 3 0 26 1976 296	5 0 2 0 15 1872 285
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 ASTM D5185m	limit/base	6 0 2 0 9 1670 236 298	4 0 3 0 26 1976 296 366	5 0 2 0 15 1872
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		6 0 2 0 9 1670 236 298 2873	4 0 3 0 26 1976 296 366 3156	5 0 2 0 15 1872 285 343 2740
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base	6 0 2 0 9 1670 236 298 2873	4 0 3 0 26 1976 296 366 3156 history1	5 0 2 0 15 1872 285 343 2740
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base >181	6 0 2 0 9 1670 236 298 2873 current	4 0 3 0 26 1976 296 366 3156 history1	5 0 2 0 15 1872 285 343 2740 history2
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 >21	6 0 2 0 9 1670 236 298 2873 current 68	4 0 3 0 26 1976 296 366 3156 history1 130	5 0 2 0 15 1872 285 343 2740 history2 93
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base >181	6 0 2 0 9 1670 236 298 2873 current	4 0 3 0 26 1976 296 366 3156 history1	5 0 2 0 15 1872 285 343 2740 history2
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 >21	6 0 2 0 9 1670 236 298 2873 current 68	4 0 3 0 26 1976 296 366 3156 history1 130	5 0 2 0 15 1872 285 343 2740 history2 93 <1
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 >21 >20	6 0 2 0 9 1670 236 298 2873 current 68 2	4 0 3 0 26 1976 296 366 3156 history1 130 1	5 0 2 0 15 1872 285 343 2740 history2 93 <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 >21 >20	6 0 2 0 9 1670 236 298 2873 current 68 2 0	4 0 3 0 26 1976 296 366 3156 history1 130 1 0	5 0 2 0 15 1872 285 343 2740 history2 93 <1 0
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	limit/base >181 >21 >20	6 0 2 0 9 1670 236 298 2873 current 68 2 0	4 0 3 0 26 1976 296 366 3156 history1 130 1 0 history1 0.1	5 0 2 0 15 1872 285 343 2740 history2 93 <1 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	limit/base >181 >21 >20	6 0 2 0 9 1670 236 298 2873 current 68 2 0 current 0 5.8	4 0 3 0 26 1976 296 366 3156 history1 130 1 0 history1 0.1 6.1	5 0 2 0 15 1872 285 343 2740 history2 93 <1 0 history2
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 METHOD *ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m METHOD *ASTM D7844 *ASTM D7844 *ASTM D7624 *ASTM D7415 METHOD	limit/base >181 >21 >20 limit/base	6 0 2 0 9 1670 236 298 2873 current 68 2 0 current 0 5.8 20.5 current	4 0 3 0 26 1976 296 366 3156 history1 130 1 0 history1 0.1 6.1 26.0 history1	5 0 2 0 15 1872 285 343 2740 history2 93 <1 0 history2 0 6.0 23.4 history2
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 ASTM D7844 *ASTM D7624 *ASTM D76145	limit/base >181 >21 >20 limit/base	6 0 2 0 9 1670 236 298 2873 current 68 2 0 current 0 5.8 20.5	4 0 3 0 26 1976 296 366 3156 history1 130 1 0 history1 0.1 6.1 26.0	5 0 2 0 15 1872 285 343 2740 history2 93 <1 0 history2 0 6.0 23.4

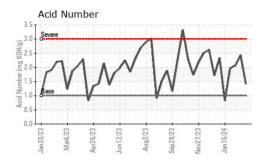
3.62

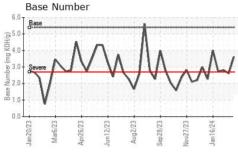
Base Number (BN) mg KOH/g ASTM D2896 5.4

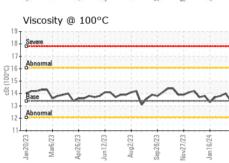
2.81



OIL ANALYSIS REPORT



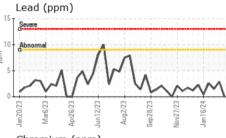


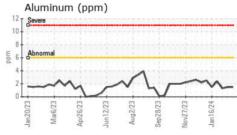


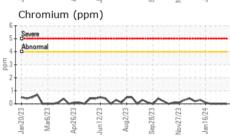
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

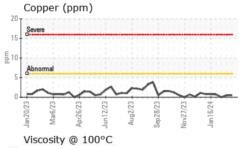
FLUID PROPER	TILO	memod			riistory i	History2
Visc @ 100°C	cSt	ASTM D445	13.4	13.4	14.0	13.8

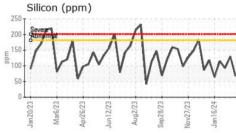
Seve	ere						
Abn	ormal						
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1	1		1	1	~	\ A	
/	1	~	1	1	~	V	h
Jan20/23	Mar6/23	Apr26/23	<u>√</u>	Aug2/23	Sep28/23 - <	Nov27/23	Jan16/24

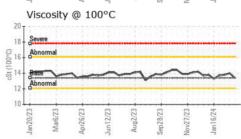


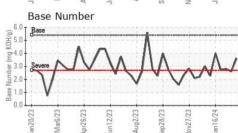
















Certificate L2367

Laboratory Sample No. Lab Number : 06132234 Unique Number: 10951699

Test Package : MOB 2

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : WC0905745

Received **Tested**

Diagnosed

: 28 Mar 2024

: 29 Mar 2024 : 02 Apr 2024 - Sean Felton **EDL NA Recips-Grand Blanc**

Grand Blanc Powerstation, 2361 West Grand Blanc Road Grand Blanc, MI US 48439

> Contact: Tony Saint Marie tony.saintmarie@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)

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