

OIL ANALYSIS REPORT

Sample Rating Trend





HANM01BE (S/N 4EK00133) Component

Biogas Engine

CHEVRON HDAX LFG SAE 40 (--- 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

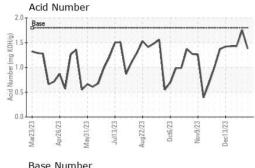
Fluid Condition

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.

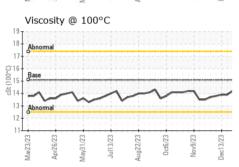
3AL 40 (GAL				Aug2023 Oct2023 Nov2023		
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0851239	WC0851238	WC0851234
Sample Date		Client Info		12 Jan 2024	05 Jan 2024	28 Dec 2023
Machine Age	hrs	Client Info		68030	67869	67672
Oil Age	hrs	Client Info		70	1152	955
Oil Changed		Client Info		Changed	Not Changd	Not Changd
Sample Status				NORMAL	ABNORMAL	NORMAL
CONTAMINATIO	N	method	limit/base	current	history1	history2
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Water		WC Method	>0.1	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>15	0	3	2
Chromium	ppm	ASTM D5185m	>4	0	0	<1
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5185m	>6	2	2	2
Lead	ppm	ASTM D5185m	>9	0	<1	2
Copper	ppm	ASTM D5185m		1	1	2
Tin	ppm	ASTM D5185m	>4	2	7	7
Vanadium		ASTM D5185m	2 4	0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
	ppm					
ADDITIVES						
		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	iimivbase	0	3	3
	ppm		iimi/base		3	
Boron		ASTM D5185m	IIIIII/base	0	3 0 3	3
Boron Barium	ppm	ASTM D5185m ASTM D5185m	IIIIII/base	0 0	3	3
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	IIIIII/Dase	0 0 2	3 0 3	3 0 1
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	IIIIII/Dase	0 0 2 <1	3 0 3 0	3 0 1 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	270	0 0 2 <1 17	3 0 3 0 22	3 0 1 <1 21
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	270	0 0 2 <1 17 1696	3 0 3 0 22 1834	3 0 1 <1 21 1799
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	270	0 0 2 <1 17 1696 282	3 0 3 0 22 1834 324	3 0 1 <1 21 1799 314
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	270	0 0 2 <1 17 1696 282 342	3 0 3 0 22 1834 324 402	3 0 1 <1 21 1799 314 398 2337
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	270 310	0 0 2 <1 17 1696 282 342 1805	3 0 3 0 22 1834 324 402 2307	3 0 1 <1 21 1799 314 398 2337
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	270 310	0 0 2 <1 17 1696 282 342 1805	3 0 3 0 22 1834 324 402 2307 history1	3 0 1 <1 21 1799 314 398 2337 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	270 310 limit/base >181	0 0 2 <1 17 1696 282 342 1805 current	3 0 3 0 22 1834 324 402 2307 history1 ▲ 181	3 0 1 <1 21 1799 314 398 2337 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	270 310 limit/base >181	0 0 2 <1 17 1696 282 342 1805 current 57	3 0 3 0 22 1834 324 402 2307 history1 ▲ 181	3 0 1 <1 21 1799 314 398 2337 history2 175 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	270 310 limit/base >181 >20	0 0 2 <1 17 1696 282 342 1805 current 57 0	3 0 3 0 22 1834 324 402 2307 history1 ▲ 181 <1 0	3 0 1 <1 21 1799 314 398 2337 history2 175 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	270 310 limit/base >181 >20 limit/base	0 0 2 <1 17 1696 282 342 1805 current 57 0	3 0 3 0 22 1834 324 402 2307 history1 ▲ 181 <1 0	3 0 1 <1 21 1799 314 398 2337 history2 175 2 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 *ASTM D5185m	270 310 limit/base >181 >20 limit/base	0 0 2 <1 17 1696 282 342 1805 current 57 0 0 current	3 0 3 0 22 1834 324 402 2307 history1 ▲ 181 <1 0	3 0 1 <1 21 1799 314 398 2337 history2 175 2 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	270 310 limit/base >181 >20 limit/base	0 0 2 <1 17 1696 282 342 1805 current 57 0 current 0 5.8	3 0 3 0 22 1834 324 402 2307 history1 ▲ 181 <1 0 history1 0.1 7.1	3 0 1 <1 21 1799 314 398 2337 history2 175 2 0 history2 0 6.7 20.7
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 D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D76145	270 310 limit/base >181 >20 limit/base >20 >30	0 0 2 <1 17 1696 282 342 1805 current 57 0 0 current 0 5.8 16.3	3 0 3 0 22 1834 324 402 2307 history1 ▲ 181 <1 0 history1 0.1 7.1 21.8	3 0 1 <1 21 1799 314 398 2337 history2 175 2 0 history2 0 6.7 20.7
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 method *ASTM D7844 *ASTM D7844 *ASTM D7844 *ASTM D7844 *ASTM D7844	270 310 limit/base >181 >20 limit/base >20 >30 limit/base	0 0 2 <1 17 1696 282 342 1805 current 57 0 0 current 0 5.8 16.3 current	3 0 3 0 22 1834 324 402 2307 history1 ▲ 181 <1 0 history1 0.1 7.1 21.8 history1	3 0 1 <1 21 1799 314 398 2337 history2 175 2 0 history2 0 6.7 20.7



OIL ANALYSIS REPORT



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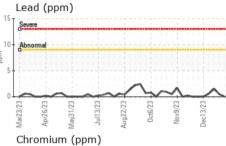


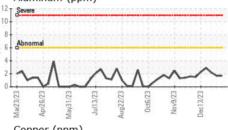
VISUAL		method				history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	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

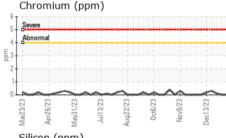
FLUID PROPER	RTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.1	13.5	14.0	14.2

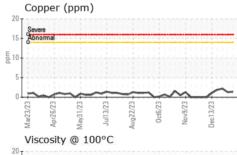
Seve	re						
Abno	ormal						
~	~/	V	~	~		~	1
Mar23/23	Apr26/23	May31/23	Jul13/23	Aug22/23	0ct6/23	Nov9/23	Jec13/23
				Aug	0	2	De
Alu	minu re	m (pp	om)				

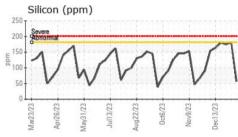
GRAPHS

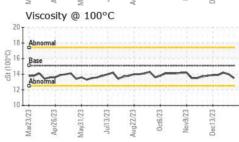


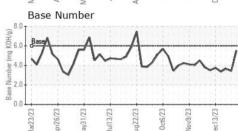
















Certificate L2367

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

: WC0851239 : 06062164 : 10833546

To discuss this sample report, contact Customer Service at 1-800-237-1369.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Recieved Diagnosed Diagnostician : Don Baldridge

: 16 Jan 2024 : 18 Jan 2024

EDL NA Recips-Hancock County HANCOCK COUNTY POWER STATION, 3574 TOWNSHIP ROAD 142

FINDLAY, OH US 45840

Contact: TIM CUSICK tim.cusick@edlenergy.com T:

* - 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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