

OIL ANALYSIS REPORT

Sample Rating Trend

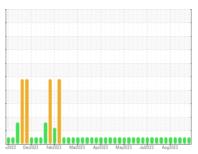
NORMAL



Hancock CAT 1 (S/N 4EK00133)

Component **Biogas Engine**

CHEVRON HDAX LFG SAE 40 (--- GAL)





Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

There is no indication of any contamination in the

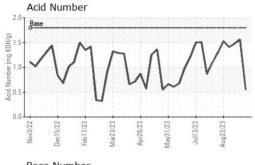
Fluid Condition

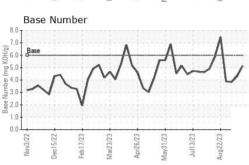
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

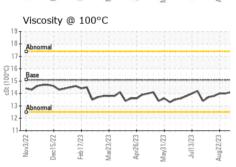
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0851202	WC0851188	WC0851185
Sample Date		Client Info		29 Sep 2023	22 Sep 2023	08 Sep 2023
Machine Age	hrs	Client Info		65622	65456	65119
Oil Age	hrs	Client Info		22	1377	1040
Oil Changed		Client Info		Changed	Not Changd	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	١	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	2	2
Chromium	ppm	ASTM D5185m		0	<1	0
Nickel	ppm	ASTM D5185m	>2	0	1	0
Titanium	ppm	ASTM D5185m	/L	<1	0	0
Silver		ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5165III		υ <1	3	<1
Lead		ASTM D5185m	>9	<1	2	2
	ppm				1	1
Copper	ppm	ASTM D5185m		0		
Tin	ppm	ASTM D5185m	>4		6	6
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method				history2
		method	IIIIII/Dase	Current	HISTOLAL	1113t01 y Z
Boron	ppm	ASTM D5185m	IIIIII/Dase	0	0	0
Boron Barium	ppm		IIIII/Dase	0 0	0	0
Boron		ASTM D5185m ASTM D5185m ASTM D5185m	IIIIIVDASE	0 0 <1	0	0
Boron Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m	IIIIIVDASE	0 0	0 1 0 <1	0 0 1 <1
Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	iiiiii/base	0 0 <1 <1 5	0 1 0	0 0 1
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	iiiiii/base	0 0 <1 <1	0 1 0 <1	0 0 1 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	270	0 0 <1 <1 5	0 1 0 <1 8	0 0 1 <1 7
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 <1 <1 5 1723	0 1 0 <1 8 1982	0 0 1 <1 7 2089
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 <1 <1 5 1723	0 1 0 <1 8 1982 299	0 0 1 <1 7 2089 315
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 <1 <1 5 1723 271 326	0 1 0 <1 8 1982 299 395	0 0 1 <1 7 2089 315 374
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 <1 <1 5 1723 271 326 1974	0 1 0 <1 8 1982 299 395 2365	0 0 1 <1 7 2089 315 374 2423
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	270 310	0 0 <1 <1 5 1723 271 326 1974	0 1 0 <1 8 1982 299 395 2365 history1	0 0 1 <1 7 2089 315 374 2423
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	270 310 limit/base >181	0 0 <1 <1 5 1723 271 326 1974 current	0 1 0 <1 8 1982 299 395 2365 history1	0 0 1 <1 7 2089 315 374 2423 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 <1 <1 5 1723 271 326 1974 current 39	0 1 0 <1 8 1982 299 395 2365 history1 145 0	0 0 1 <1 7 2089 315 374 2423 history2
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 <1 <1 5 1723 271 326 1974 current 39 0 <1	0 1 0 <1 8 1982 299 395 2365 history1 145 0	0 0 1 <1 7 2089 315 374 2423 history2 152 2 <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	270 310 limit/base >181 >20	0 0 -<1 -<1 5 1723 271 326 1974 current 39 0 -<1	0 1 0 <1 8 1982 299 395 2365 history1 145 0 2 history1	0 0 1 <1 7 2089 315 374 2423 history2 152 2 <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 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 -1 -1 5 1723 271 326 1974	0 1 0 <1 8 1982 299 395 2365 history1 145 0 2 history1 0.1	0 0 1 <1 7 2089 315 374 2423 history2 152 2 <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 ASTM D5185m	270 310 limit/base >181 >20 limit/base	0 0 -1 -1 -1 -5 -1723 -271 -326 -1974	0 1 0 <1 8 1982 299 395 2365 history1 145 0 2 history1 0.1 7.2	0 0 1 <1 7 2089 315 374 2423 history2 152 2 <1 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 D7415	270 310 limit/base >181 >20 limit/base >20 >30	0 0 -1 -1 -1 -5 -1723 -271 -326 -1974	0 1 0 <1 8 1982 299 395 2365 history1 145 0 2 history1 0.1 7.2 21.0	0 0 1 <1 7 2089 315 374 2423 history2 152 2 <1 history2 0.1 7.6 21.0
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 ASTM D5185m Method *ASTM D7624 *ASTM D7415 Method *ASTM D7414	270 310 limit/base >181 >20 limit/base >20 >30 limit/base	0 0	0 1 0 <1 8 1982 299 395 2365 history1 145 0 2 history1 0.1 7.2 21.0 history1	0 0 1 <1 7 2089 315 374 2423 history2 152 2 <1 history2 0.1 7.6 21.0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA Oxidation	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 Method *ASTM D7624 *ASTM D7415 Method *ASTM D7414	270 310 limit/base >181 >20 limit/base >20 >30 limit/base	0 0	0 1 0 <1 8 1982 299 395 2365 history1 145 0 2 history1 0.1 7.2 21.0 history1 17.1	0 0 1 <1 7 2089 315 374 2423 history2 152 2 <1 history2 0.1 7.6 21.0 history2 17.2



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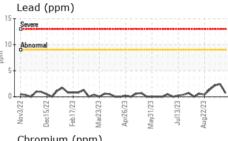


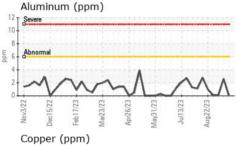
VISUAL		method				history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance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

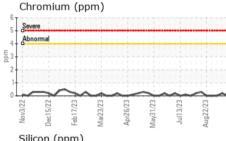
FLUID PROPER	HES	method	limit/base		history1	history2
Visc @ 100°C	cSt	ASTM D445	15.1	13.6	14.3	14.1

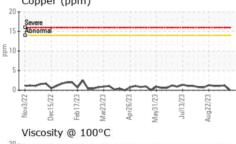
O-CVC	ere						
Abn	ormal						11/11/1
1	V	~	~	/	\	_	~~
				~~	_		
2	2		· ·	~~~		~~~	· · ·
Nov3/22	ec15/22	Feb17/23	Mar23/23	Apr26/23	May31/23	Jul13/23	Aug22/23

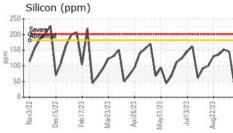
GRAPHS

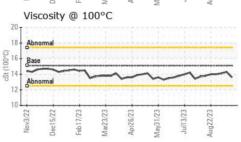


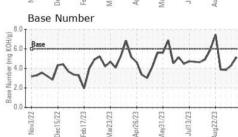
















Certificate L2367

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

: WC0851202 : 05966504 : 10673055

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

: 02 Oct 2023 : 03 Oct 2023 Diagnostician : Sean Felton

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

FINDLAY, OH US 45840

Contact: TIM CUSICK

tim.cusick@energydevelopments.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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