

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



HANM04BE (S/N 4EK00413) Component

Biogas Engine

CHEVRON HDAX LFG SAE 40 (95 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

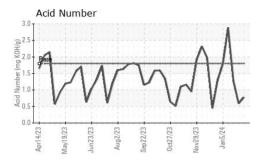
Fluid Condition

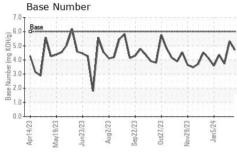
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

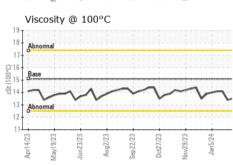
2 (33 33 1		12023 May20	23 Jun2023 Aug2023	Sep2023 Oct2023 Nov2023 .		
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0898140	WC0851246	WC0851249
Sample Date		Client Info		29 Jan 2024	25 Jan 2024	17 Jan 2024
Machine Age	hrs	Client Info		72512	72424	72255
Oil Age	hrs	Client Info		107	19	833
Oil Changed		Client Info		Not Changd	Changed	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	٧	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	3	<1	3
Chromium	ppm	ASTM D5185m	>4	<1	0	0
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		<1	0	<1
Silver	ppm	ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5185m	>6	2	2	2
Lead	ppm	ASTM D5185m	>9	<1	<1	<1
Copper	ppm	ASTM D5185m	>14	1	0	2
Tin	ppm	ASTM D5185m	>4	3	2	6
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		8	8	5
Boron Barium	ppm	ASTM D5185m ASTM D5185m		8 <1	8	5 0
Barium	ppm					
		ASTM D5185m		<1	0	0
Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m		<1 3	0 2	0 3
Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m		<1 3 <1	0 2 <1	0 3 <1
Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	270	<1 3 <1 17	0 2 <1 20	0 3 <1 31
Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	270	<1 3 <1 17 1641	0 2 <1 20 1713	0 3 <1 31 1941
Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		<1 3 <1 17 1641 257	0 2 <1 20 1713 282	0 3 <1 31 1941 333
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		<1 3 <1 17 1641 257 346	0 2 <1 20 1713 282 340	0 3 <1 31 1941 333 421
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	310	<1 3 <1 17 1641 257 346 1981	0 2 <1 20 1713 282 340 1696	0 3 <1 31 1941 333 421 2432
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	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	310 limit/base	<1 3 <1 17 1641 257 346 1981	0 2 <1 20 1713 282 340 1696 history1	0 3 <1 31 1941 333 421 2432 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	310 limit/base	<1 3 <1 17 1641 257 346 1981 current	0 2 <1 20 1713 282 340 1696 history1	0 3 <1 31 1941 333 421 2432 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	310 limit/base >181	<1 3 <1 17 1641 257 346 1981 current 69 0	0 2 <1 20 1713 282 340 1696 history1 46 <1	0 3 <1 31 1941 333 421 2432 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	310 limit/base >181 >20	<1 3 <1 17 1641 257 346 1981 current 69 0 2	0 2 <1 20 1713 282 340 1696 history1 46 <1	0 3 <1 31 1941 333 421 2432 history2 159 <1
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	310 limit/base >181 >20	<1 3 <1 17 1641 257 346 1981 current 69 0 2 current	0 2 <1 20 1713 282 340 1696 history1 46 <1 2 history1	0 3 <1 31 1941 333 421 2432 history2 159 <1 0 history2
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	limit/base >181 >20 limit/base	<1 3 <1 17 1641 257 346 1981 current 69 0 2 current	0 2 <1 20 1713 282 340 1696 history1 46 <1 2 history1 0	0 3 <1 31 1941 333 421 2432 history2 159 <1 0 history2 0.1
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	310 limit/base >181 >20 limit/base >20	<1 3 <1 17 1641 257 346 1981 current 69 0 2 current 0 6.2	0 2 <1 20 1713 282 340 1696 history1 46 <1 2 history1 0 5.7	0 3 <1 31 1941 333 421 2432 history2 159 <1 0 history2 0.1 7.7
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	310 limit/base >181 >20 limit/base >20 >30	<1 3 <1 17 1641 257 346 1981 current 69 0 2 current 0 6.2 17.5	0 2 <1 20 1713 282 340 1696 history1 46 <1 2 history1 0 5.7 16.2	0 3 <1 31 1941 333 421 2432 history2 159 <1 0 history2 0.1 7.7 22.6
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 *ASTM D5185m method *ASTM D7844 *ASTM D7624 *ASTM D7415 method	limit/base >181 >20 limit/base >20 >30 limit/base	<1 3 <1 17 1641 257 346 1981 current 69 0 2 current 0 6.2 17.5 current	0 2 <1 20 1713 282 340 1696 history1 46 <1 2 history1 0 5.7 16.2 history1	0 3 <1 31 1941 333 421 2432 history2 159 <1 0 history2 0.1 7.7 22.6 history2
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 ASTM D5185m ASTM D5185m ASTM D78185m method *ASTM D7844 *ASTM D7624 *ASTM D7415 method *ASTM D7414	limit/base >181 >20 limit/base >20 >30 limit/base >25	<1 3 <1 17 1641 257 346 1981 current 69 0 2 current 0 6.2 17.5 current	0 2 <1 20 1713 282 340 1696 history1 46 <1 2 history1 0 5.7 16.2 history1 9.5	0 3 <1 31 1941 333 421 2432 history2 159 <1 0 history2 0.1 7.7 22.6 history2 19.7



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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	HES	method			history1	history2
Visc @ 100°C	cSt	ASTM D445	15.1	13.5	13.4	14.1

VISC @ TOO'C	COL	ASTIVI D44	15.1	13.5	13.4	14.1
GRAPHS						
Iron (ppm)				Lead (ppm)		
Severe				Severe		
Abnormal				10 - Abnormal		
				E I		
M	~1	\ ~		5	~~	M
	, V		**VV	0 2 2 2	~~ 2	
Apr14/23 May19/23 Jun23/23 Aug2/23	Sep22/23	Uctz 1/23	Jan5/24	Apr14/23 May19/23 Jun23/23	Aug2/23	Oct27/23 Nov29/23 Jan5/24
Aluminum (ppm)				Chromium (
Severe				Severe		
				4 Abnormal		
Abnormal				E3-		
3 A . ~	۸ ،			2		
VW	VV	7	1		~~~	·~~
Apr14/23 - May19/23 - Jun23/23 - Aug2/23 -	Sep22/23	Uctz 1/23	Jan5/24	Apr14/23 May19/23 Jun23/23	Aug2/23 Sep22/23	Oct27/23 ·
Copper (ppm)	Ø.	2		silicon (ppm	0,	0 2
T			7777777	250		
Severe Abnormal				200 - Severe Abgornal		
1				E 150-	1 M	1///
MM	~			E 150	1/	V
		~~	~~	50	V	
73	53	73	724	Z3 Z3 D3	73 -	723 + 723 + 724 + 7
Apr14/23 May19/23 Jun23/23 Aug2/23	Sep22/23	Uctz 1/23 Nov29/23	Jan5/24	Apr14/23 May19/23 Jun23/23	Aug2/23 -	Oct27/23 - Nov29/23 - Jan5/24
Viscosity @ 100°C				Base Numbe		
				8.0 Page		
Abnormal			**********	Base	11	
Base	~~			10 4.0 V	NON	VVV
Abnormal				(b)HO) Base Base Annu per Mumber and Annu per	V	
			DITCH.	0.0		
Apr14/23 May19/23 Jun23/23 Aug2/23	Sep22/23	Uctz 1/23	Jan5/24	Apr14/23 May19/23 Jun23/23	Aug2/23 Sep22/23	Oct27/23 -
Api Jun Au	Sep	Nov	J.	Apr May Jun	Au	Oct Nov





Certificate L2367

Laboratory Sample No.

: WC0898140 Lab Number : 06076019 Unique Number : 10858110 Test Package : MOB 2

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 31 Jan 2024

Tested : 01 Feb 2024 Diagnosed

EDL NA Recips-Hancock County

HANCOCK COUNTY POWER STATION, 3574 TOWNSHIP ROAD 142

FINDLAY, OH US 45840

: 01 Feb 2024 - Sean Felton Contact: TIM CUSICK tim.cusick@edlenergy.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)

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