

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



Machine Id SJNM02BE Component

Biogas Engine

CHEVRON HDAX 9500 GAS ENGINE OIL 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.

SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0865750	WC0865747	WC0865725
Sample Date		Client Info		22 Feb 2024	15 Feb 2024	08 Feb 2024
Machine Age	hrs	Client Info		114298	114128	113962
Oil Age	hrs	Client Info		170	968	802
Oil Changed		Client Info		Not Changd	Changed	Not Changd
Sample Status				NORMAL	SEVERE	ABNORMAL
CONTAMINATION	J	method	limit/base	current	history1	history2
	N					
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	<1	6	5
Chromium	ppm	ASTM D5185m	>4	0	<1	0
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>6	1	2	<1
Lead	ppm	ASTM D5185m	>9	2	4	3
Copper	ppm	ASTM D5185m	>6	1	2	<1
Tin	ppm	ASTM D5185m	>4	1	4	2
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 3	history1 3	history2 2
	ppm ppm		limit/base			
Boron		ASTM D5185m	limit/base	3	3	2
Boron Barium	ppm	ASTM D5185m ASTM D5185m	limit/base	3 0	3 10	2 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	3 0 4	3 10 9	2 0 9
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	3 0 4 <1	3 10 9 0	2 0 9 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	3 0 4 <1 25	3 10 9 0 25	2 0 9 <1 26
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	3 0 4 <1 25 1825	3 10 9 0 25 2020	2 0 9 <1 26 2086
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	limit/base	3 0 4 <1 25 1825 269	3 10 9 0 25 2020 368	2 0 9 <1 26 2086 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	limit/base	3 0 4 <1 25 1825 269 345	3 10 9 0 25 2020 368 380	2 0 9 <1 26 2086 314 397
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		3 0 4 <1 25 1825 269 345 1890	3 10 9 0 25 2020 368 380 2659	2 0 9 <1 26 2086 314 397 2426
Boron 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	limit/base	3 0 4 <1 25 1825 269 345 1890 current	3 10 9 0 25 2020 368 380 2659 history1	2 0 9 <1 26 2086 314 397 2426 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	limit/base >181	3 0 4 <1 25 1825 269 345 1890 current 63	3 10 9 0 25 2020 368 380 2659 history1 ▲ 213	2 0 9 <1 26 2086 314 397 2426 history2 ▲ 199
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	limit/base >181	3 0 4 <1 25 1825 269 345 1890 current 63 <1	3 10 9 0 25 2020 368 380 2659 history1 ▲ 213 0	2 0 9 <1 26 2086 314 397 2426 history2 ▲ 199 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >181 >20	3 0 4 <1 25 1825 269 345 1890 current 63 <1 2	3 10 9 0 25 2020 368 380 2659 history1 ▲ 213 0 5	2 0 9 <1 26 2086 314 397 2426 history2 ▲ 199 2 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >181 >20 limit/base	3 0 4 <1 25 1825 269 345 1890 current 63 <1 2 2	3 10 9 25 2020 368 380 2659 history1 213 0 5 5	2 0 9 <1 26 2086 314 397 2426 history2 199 2 3 3 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	limit/base >181 >20 limit/base	3 0 4 <1 25 1825 269 345 1890 current 63 <1 2 current 0	3 10 9 25 2020 368 380 2659 history1 ▲ 213 0 5 <u>history1</u> 0.1	2 0 9 <1 26 2086 314 397 2426 history2 199 2 3 3 history2 0.1
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 ASTM D5185m	Imit/base >181 >20 Imit/base >20 >30	3 0 4 <1 25 1825 269 345 1890 <u>current</u> 63 <1 2 <u>current</u> 0 6.2 17.3	3 10 9 25 2020 368 380 2659 history1 213 0 5 5 history1 0.1 8.2 24.4	2 0 9 <1 26 2086 314 397 2426 history2 199 2 3 3 history2 0.1 7.8 23.3
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 ASTM D7844 *ASTM D7844	limit/base >181 >20 limit/base >20 >30 limit/base	3 0 4 <1 25 1825 269 345 1890 Current 63 <1 2 Current 0 6.2 17.3 Current	3 10 9 0 25 2020 368 380 2659 history1 ▲ 213 0 5 history1 0.1 8.2 24.4 history1	2 0 9 <1 26 2086 314 397 2426 history2 ▲ 199 2 3 3 history2 0.1 7.8 23.3 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 ASTM D7844 *ASTM D7624 *ASTM D7624 *ASTM D7415	limit/base >181 >20 limit/base >20 s30 limit/base >25	3 0 4 <1 25 1825 269 345 1890 current 63 <1 2 current 0 6.2 17.3 current 11.1	3 10 9 25 2020 368 380 2659 history1 ▲ 213 0 5 history1 0.1 8.2 24.4 history1 22.0	2 0 9 <1 26 2086 314 397 2426 history2 ↓ 199 2 3 3 history2 0.1 7.8 23.3 history2 23.3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation Sulfation COXidation Acid Number (AN)	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415 Method ASTM D7414 ASTM D7414	Imit/base >181 >20 Imit/base >20 30 Imit/base >225 1.1	3 0 4 <1 25 1825 269 345 1890 current 63 <1 2 current 0 6.2 17.3 current 11.1 0.70	3 10 9 25 2020 368 380 2659 history1 213 0 5 5 history1 0.1 8.2 24.4 24.4 history1	2 0 9 3 4 26 2086 314 397 2426 history2 199 2 2426 history2 0.1 7.8 23.3 history2 0.1 7.8 23.3
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 ASTM D7844 *ASTM D7624 *ASTM D7624 *ASTM D7415	limit/base >181 >20 limit/base >20 s30 limit/base >25	3 0 4 <1 25 1825 269 345 1890 current 63 <1 2 current 0 6.2 17.3 current 11.1	3 10 9 25 2020 368 380 2659 10 2659 10 2659 10 13 0 5 10 0.1 8.2 213 0 0 5 10 10 10 2 2 4.4 10 2 2.0 1.80 3.79	2 0 9 <1 26 2086 314 397 2426 history2 ↓ 199 2 3 3 history2 0.1 7.8 23.3 history2 23.3



12 11

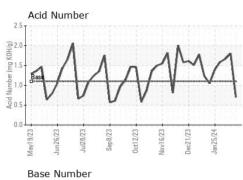
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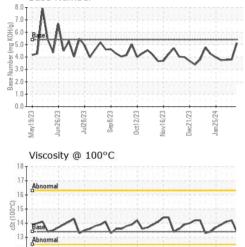
May19/23

Jun26/23

Jul28/23 Sep8/23 Oct12/23 Nov16/23

OIL ANALYSIS REPORT





		VISUAL		method				history2	
		White Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
1	1 1	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
IN	1/1	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE	
1/ 1		Silt	scalar	*Visual	NONE	NONE	NONE	NONE	
V	1	Debris	scalar	*Visual	NONE	NONE	NONE	NONE	
		Sand/Dirt		*Visual	NONE	NONE	NONE	NONE	
53 53	23 -		scalar	*Visual	NORML	NORML	NORML	NORML	
Ucti 2/23 Nov16/23	Dec21/23 Jan25/24	Appearance	scalar		NORML				
2		Odor	scalar	*Visual		NORML	NORML	NORML	
		Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG	
		Free Water	scalar	*Visual		NEG	NEG	NEG	
		FLUID PROPERT		method	limit/base	current	history1	history2	
\sim	\sim	Visc @ 100°C GRAPHS	cSt	ASTM D445	13.4	13.4	14.2	14.1	
						Lood (mmm)			
		Iron (ppm)			20	Lead (ppm)		0000000000000000	
/23	/23	20 - Severe							
ucti 2/23 Nov16/23	Dec21/23 Jan25/24	= 15 - Abnormal				Serve			
~		E 13 - C			톮 10-	Abnormal			
		5-			M 5-	VIL	100	1 A w	
			~	n.m		V	VV	VV.	
		May19/23 Jun26/23 Jul28/23 Sep8/23	0ct12/23	Nov16/23 Dec21/23		May19/23 Jun26/23 Jul28/23	Sep 8/23 Oct1 2/23 Vov1 6/23	Dec21/23 Jan25/24	
		May ¹ Jun2 Jul2 Sep	0ct1	Nov Dec2		May Jun2 Jul2	Seg Oct1 Nov1	Deci Jan2	
11.	22	Aluminum (ppm)				Chromium (pp	m)		
- 1		12 Severe		122220000000000000000000000000000000000	6	Severe			
		10			5.	Abnormal			
i	e 4	E 6 Abnormal			4. Ed.3-				
ucri 2/23 Nov16/23	Dec21/23 Jan25/24	4			2·				
Nov	Jair		- 1	Sin					
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		May19/23 Jun26/23 Jul28/23 Sep8/23	0ct12/23	Nov16/23 Dec21/23		May19/23 Jun26/23 Jul28/23	Sep 8/23 Oct1 2/23 Nov1 6/23	Dec21/23 Jan25/24	
		2 7 7	00	Del		2 ,	S Oc	Jair	
		Copper (ppm)				Silicon (ppm)			
		20 Severe			250-	SAR A A	1 1 1		
		15		4	200-	acompensar /	MF	AF	
		튭 10-			150 - E 100 -	VV	VV	VV	
		Abnormal				VV	VV	• •	
		Inon.	m	22	∽ ⁵⁰⁻				
			23	23		23	23 - 23 - 23 -	23 - 24 -	
		May19/23 Jun26/23 Jul28/23 Sep8/23	0ct12/23	Nov16/23 Dec21/23		May19/23 Jun26/23 Jul28/23	Sep 8/23 0ct1 2/23 Nov1 6/23	Dec21/23 Jan25/24	
		≊ ຸ ີ Viscosity @ 100°C		2 0 -		≊ ਤ ె Base Number	0 2	n j	
		VISCOSITY @ 100°C	Dogođeni state stat	122220000000000000	8.0-	Dase Number		000000000000000000	
		Abnormal	1.1.1	(Perfection)	(B/H0				
						***		A A	
		G-00114 授書 Abnormal	~	22	(B)(HO) (B) 4.0- Base Number (mg KOH(K)) 2.0-		~~	~~	
		via Abnormal			N 2.0	17.01 10.01 10.			
		10							
			2/23 -	6/23		9/23 - 5/23 -	8/23 - 2/23 - 3/22 - 3/22 - 3/2	1/23	
		May19/23 Jun26/23 Jul28/23 Sep8/23	0ct12/23	Nov16/23 Dec21/23	3	May19/23 Jun26/23 Jul28/23	Sep 8/23 0ct1 2/23 Nov1 6/23	Dec21/23 Jan25/24	
							-		
Laboratory		: WearCheck USA - 501				EDL NA Recips-South Jord			
Sample No. Lab Number		: WC0865750	Recei Teste		Feb 2024	South Jorda	ordan Powerstation, 10473 S. Bacchus Hv South Jordan, L		
DITED				ted : 27 Feb 2024 gnosed : 28 Feb 2024 - Jonathan Hester			30	US 8409	
C (7025	Inigua Number		1000					00 0403	
ABORATORY	Unique Number Test Package		Diagi				Conte	act: Aaron Kle	
ate L2367	Test Package		Ũ					act: Aaron Kle Dedlenergy.co	