

# **OIL ANALYSIS REPORT**

Sample Rating Trend

## NORMAL



Machine Id SJNM02BE

Biogas Engine

Fluid 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

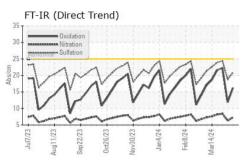
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

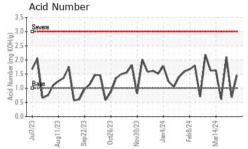
SAMPLE INFORM	1ATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0865686	WC0865720	WC0865723
Sample Date		Client Info		11 Apr 2024	04 Apr 2024	28 Mar 2024
Machine Age	hrs	Client Info		115463	115295	115128
Oil Age	hrs	Client Info		335	167	1000
Oil Changed		Client Info		Not Changd	Not Changd	Changed
Sample Status				NORMAL	NORMAL	SEVERE
CONTAMINATION	١	method	limit/base	current	history1	history2
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Water		WC Method		NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>14	1	0	2
Chromium	ppm	ASTM D5185m	>3	0	0	<1
Nickel	ppm	ASTM D5185m		<1	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>5	1	<1	2
Lead	ppm	ASTM D5185m	>8	<1	<1	3
Copper	ppm	ASTM D5185m	>5	<1	0	<1
Tin	ppm	ASTM D5185m	>3	<1	1	3
Vanadium	ppm	ASTM D5185m		<1	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 2	history1 3	history2 4
	ppm ppm		limit/base			
Boron		ASTM D5185m	limit/base	2	3	4
Boron Barium	ppm	ASTM D5185m ASTM D5185m	limit/base	2 0	3 0	4 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	2 0 5	3 0 4	4 0 5
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	2 0 5 <1	3 0 4 <1	4 0 5 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	2 0 5 <1 22 1906 257	3 0 4 <1 30 1836 273	4 0 5 <1 38
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	2 0 5 <1 22 1906	3 0 4 <1 30 1836	4 0 5 <1 38 2189 345 411
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	limit/base	2 0 5 <1 22 1906 257	3 0 4 <1 30 1836 273	4 0 5 <1 38 2189 345
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	2 0 5 <1 22 1906 257 300	3 0 4 <1 30 1836 273 343	4 0 5 <1 38 2189 345 411 2866 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b>	limit/base	2 0 5 <1 22 1906 257 300 2088 current 121	3 0 4 <1 30 1836 273 343 1700 history1 75	4 0 5 <1 38 2189 345 411 2866 history2 ▲ 200
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	limit/base	2 0 5 <1 22 1906 257 300 2088 current	3 0 4 <1 30 1836 273 343 1700 history1	4 0 5 <1 38 2189 345 411 2866 history2 200 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b>	limit/base	2 0 5 <1 22 1906 257 300 2088 current 121	3 0 4 <1 30 1836 273 343 1700 history1 75	4 0 5 <1 38 2189 345 411 2866 history2 ▲ 200
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm	ASTM D5185m ASTM D5185m	limit/base >180 >20	2 0 5 <1 22 1906 257 300 2088 <u>current</u> 121 2	3 0 4 <1 30 1836 273 343 1700 history1 75 1	4 0 5 <1 38 2189 345 411 2866 <b>history2</b> 200 2 2 2 <b>history2</b>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm	ASTM D5185m ASTM D5185m	limit/base >180 >20 >20	2 0 5 <1 22 1906 257 300 2088 <u>current</u> 121 2 0	3 0 4 <1 30 1836 273 343 1700 history1 75 1 0	4 0 5 <1 38 2189 345 411 2866 history2 ▲ 200 2 2
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 ASTM D5185m	limit/base >180 >20 >20	2 0 5 <1 22 1906 257 300 2088 <i>current</i> 121 2 0 <i>current</i>	3 0 4 <1 30 1836 273 343 1700 history1 75 1 0 bistory1	4 0 5 <1 38 2189 345 411 2866 history2 2 2 2 history2
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 ASTM D5185m	limit/base >180 >20 >20	2 0 5 <1 22 1906 257 300 2088 <u>current</u> 121 2 0 <u>current</u> 0	3 0 4 <1 30 1836 273 343 1700 history1 75 1 0 history1 0	4 0 5 <1 38 2189 345 411 2866 history2 2 2 2 0.1
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 ASTM D5185m	limit/base >180 >20 >20	2 0 5 <1 22 1906 257 300 2088 <i>current</i> 121 2 0 <i>current</i> 0.1 7.3	3 0 4 <1 30 1836 273 343 1700 history1 75 1 0 history1 0 6.3	4 0 5 <1 38 2189 345 411 2866 history2 2 2 2 0.1 8.4
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	limit/base >180 >20 >20 >20 limit/base	2 0 5 <1 22 1906 257 300 2088 <u>current</u> 121 2 0 <u>current</u> 0.1 7.3 20.9	3 0 4 <1 30 1836 273 343 1700 history1 75 1 0 history1 0 6.3 18.8	4 0 5 <1 38 2189 345 411 2866 history2 2 2 2 0.1 8.4 24.4
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 D7624 *ASTM D7415	limit/base >180 >20 >20 limit/base	2 0 5 <1 22 1906 257 300 2088 <i>current</i> 121 2 0 <i>current</i> 0.1 7.3 20.9 <i>current</i>	3 0 4 <1 30 1836 273 343 1700 history1 75 1 0 history1 0 6.3 18.8 history1	4 0 5 <1 38 2189 345 411 2866 history2 2 2 2 0.1 8.4 24.4 bistory2
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 >180 >20 >20 limit/base	2 0 5 <1 22 1906 257 300 2088 <u>current</u> 121 2 0 <u>current</u> 0.1 7.3 20.9 <u>current</u> 16.2	3 0 4 <1 30 1836 273 343 1700 history1 75 1 0 history1 0 6.3 18.8 history1 11.9	4 0 5 <1 38 2189 345 411 2866 <b>history2</b> 2 2 0.1 8.4 24.4 <b>history2</b> 22.3

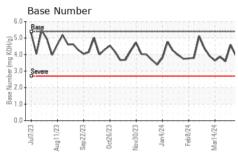
Report Id: EDLSOU [WUSCAR] 06148897 (Generated: 04/17/2024 22:01:40) Rev: 1

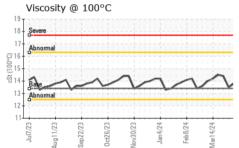


# **OIL ANALYSIS REPORT**









VISUAL		method			
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual		NEG	NEG
Free Water	scalar	*Visual		NEG	NEG
FLUID PROPER	TIES	method	limit/base	current	history1
Visc @ 100°C	cSt	ASTM D445	13.4	13.8	13.5
GRAPHS					
Iron (ppm)			-194	Lead (ppm)	
Severe			15	Severe	
			10 E	Anormal	
_ Abnormal			mdd 5	11.	
200	~	m	<u>^.</u>	VV	$\mathcal{M}\mathcal{M}$
Jul7/23 - Aug 11/23 - Sep22/23 - Oct26/23 -	Nov30/23	Jan 4/24 + Feb 8/24 +	<b>····</b> 0	Jul7/23 - Aug 11/23 - Sep 22/23 -	0ct26/23 - Vov30/23 1
Au S	Nov3	Jan Feb		Jul Aug1 Sep2	Dct2 Nov3 Jan
Aluminum (ppm)			5	Chromium (pp	om)
Severe			4	Severe	
				Abnormal	
Abnormal			2 E	Indada	
	A	<b>.</b>	1		
			0		$\sim \sim $
Jul7/23 Aug11/23 Sep22/23 Oct26/23	Nov30/23	Jan4/24 Feb8/24	7/1	Jul7/23 Aug11/23 Sep22/23	0ct26/23 Nov30/23 Jan4/24
S AL	No		5 8	S	°0 N r
Copper (ppm)			250	Silicon (ppm)	
Severe			200	Savere A	1 A A
			e <sup>150</sup>		1/1/1/
Al			토 <sup>150</sup> 100	VV	VVV
Abnormal			50		
	$\sim$		0	23	23 +
Jul7/23 - Aug 11/23 - Sep 22/23 - Oct26/23 -	Nov30/23	Jan4/24 Feb8/24	7/L   ID	Jul7/23 Aug11/23 Sep22/23	0ct26/23 Nov30/23 Jan4/24
َ مَعْ مَعْ كَمَّ Viscosity @ 100°C			2	Base Number	0 %
	•. ::::::::::::::::::::::::::::::::::::	11-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	<u>-</u> 6.0	Base Number	
Abnormal			(PHOX But ) 3.0 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	MA 1	
Abnormal			E 4.0	Severe	
Abromal	~	2~	2.0		
			2 ag 1.0		
23	23 +	24 - 24 - 24 -	0.0	23	23
Jul7/23 Aug11/23 Sep22/23 Oct26/23	Nov30/23	Jan4/24 Feb8/24	2 2	Jul7/23 Aug11/23 Sep22/23	0ct26/23 - Nov30/23 - Jan4/24 -
3 0 0	20	Ja Fe	0	r Bn ds	Ja D

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 EDL NA Recips-South Jordan Sample No. : WC0865686 Received : 15 Apr 2024 South Jordan Powerstation, 10473 S. Bacchus Hwy. Lab Number : 06148897 Tested : 16 Apr 2024 South Jordan, UT US 84095 Unique Number : 10978975 Diagnosed : 17 Apr 2024 - Sean Felton Test Package : MOB 2 Contact: Aaron Klein Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. aaron.klein@edlenergy.com \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. Т:

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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Submitted By: Aaron Klein

Feb8/24

Mar14/24

NONE

NONE

NONE NONE NONE

NONE NORML

NORML NEG

NEG

14.4

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