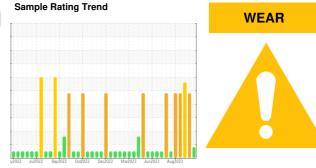


OIL ANALYSIS REPORT



Keyer

BRCM01BE (S/N GZJ00658)

Biogas Engine

CHEVRON HDAX 6500 LFG GAS ENGINE OIL (--- GAL)

GAS ENGINE OIL (GAL)										
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2				
Sample Number		Client Info		WC0760968	WC0760970	WC076095				
Sample Date		Client Info		27 Sep 2023	19 Sep 2023	11 Sep 202				
Machine Age	hrs	Client Info		71803	71643	71458				
Oil Age	hrs	Client Info		92	71643	329				
Oil Changed		Client Info		N/A	Not Changd	N/A				
Sample Status				ABNORMAL	SEVERE	SEVERE				
CONTAMINATIO	N	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	2	8	8				
Chromium	ppm	ASTM D5185m	>4	0	<1	<1				
Nickel	ppm	ASTM D5185m	>2	0	<1	<1				
Titanium	ppm	ASTM D5185m		0	0	0				
Silver	ppm	ASTM D5185m	>5	0	0	0				
Aluminum	ppm	ASTM D5185m	>6	<u> </u>	<1	<u> </u>				
Lead	ppm	ASTM D5185m	>9	1	4	3				
Copper	ppm	ASTM D5185m	>6	0	2	3				
Tin	ppm	ASTM D5185m	>4	1	9	8				
Vanadium	ppm	ASTM D5185m		0	0	0				
Cadmium	ppm	ASTM D5185m		0	0	0				
ADDITIVES		method	limit/base	current	history1	history2				
Boron	ppm	ASTM D5185m		10	8	10				
Barium	ppm	ASTM D5185m		0	0	0				
Molybdenum	ppm	ASTM D5185m		6	8	8				
Manganese	ppm	ASTM D5185m		0	<1	<1				
Magnesium	ppm	ASTM D5185m		28	32	00				
Calcium	ppm				02	32				
	ppm	ASTM D5185m		1848	2026	32 1918				
Phosphorus	ppm	ASTM D5185m ASTM D5185m		1848 332						
					2026	1918				
Zinc	ppm	ASTM D5185m		332	2026 319	1918 331				
Zinc	ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base	332 386	2026 319 403	1918 331 405 2974				
Zinc Sulfur CONTAMINANTS	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	332 386 2001	2026 319 403 2897	1918 331 405 2974				
Zinc Sulfur	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m method		332 386 2001 current	2026 319 403 2897 history1	1918 331 405 2974 history2				
Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	>181	332 386 2001 current 81	2026 319 403 2897 history1 • 392	1918 331 405 2974 history2				
Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m	>181	332 386 2001 current 81 <1	2026 319 403 2897 history1 392 1	1918 331 405 2974 history2 ● 364 3 <1				
CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844	>181 >20 limit/base	332 386 2001 current 81 <1 0	2026 319 403 2897 history1 ● 392 1 2	1918 331 405 2974 history2 ● 364 3 <1				
Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m	>181 >20 limit/base	332 386 2001 current 81 <1 0 current	2026 319 403 2897 history1 392 1 2 2 history1	1918 331 405 2974 history2 364 3 <1 history2				
Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844	>181 >20 limit/base	332 386 2001 current 81 <1 0 current 0	2026 319 403 2897 history1 ● 392 1 2 2 history1 0	1918 331 405 2974 history2 364 3 <1 history2 0.1				
Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844 *ASTM D7624	>181 >20 limit/base >20	332 386 2001 current 81 <1 0 current 0 4.8	2026 319 403 2897 history1	1918 331 405 2974 history2 ● 364 3 <1 history2 0.1 6.0 24.5				
Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844 *ASTM D7844 *ASTM D7624	>181 >20 limit/base >20 >30	332 386 2001 current 81 <1 0 current 0 4.8 15.2	2026 319 403 2897 history1	1918 331 405 2974 history2 ● 364 3 <1 history2 0.1 6.0 24.5				
Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm ppm ppm ppm ppm ppm ppm ppm ppm Abs/cm Abs/cm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844 *ASTM D7844 *ASTM D7624 *ASTM D7415	>181 >20 limit/base >20 >30 limit/base	332 386 2001 current 81 <1 0 current 0 4.8 15.2 current	2026 319 403 2897 history1 ● 392 1 2 history1 0 6.7 28.4 history1	1918 331 405 2974 history2 ● 364 3 <1 history2 0.1 6.0 24.5 history2				

Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

📥 Wear

The aluminum level is abnormal. All other component wear rates are normal.

Contamination

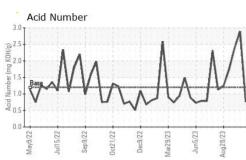
There is no indication of any contamination in the oil.

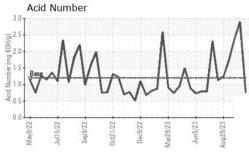
Fluid Condition

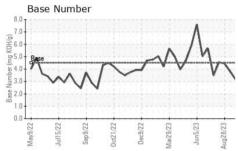
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

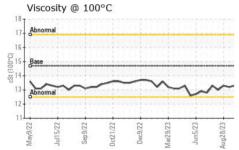


OIL ANALYSIS REPORT









	VISUAL		method	limit/base	current	history1	history2
Λ	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
1/1	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
. 1/1	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
AV	Silt	scalar	*Visual	NONE	NONE	NONE	NONE
	Debris	scalar	*Visual	NONE	NONE	NONE	NONE
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
1/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Mar25/23 Jun5/23 Aug28/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
	Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG
522000522020522 2 00	Free Water	scalar	*Visual	20.1	NEG	NEG	NEG
. 1	FLUID PROPERT	IES	method	limit/base	current	history1	history2
Λ/Ι	Visc @ 100°C	cSt	ASTM D445	14.7	13.1	13.5	13.3
AIVI	GRAPHS				-		
	Iron (ppm)				Lead (ppm)		
	25 Severe			15	Severe		
Mar25/23 Jun5/23 Aug28/23	Abnomal			10			
Ju Aug.	15 - Abnormal				- Abnormal		
	Λ.			^ 5			
111111111111111111111111111111111111111	mm	~	M	1	1	m.	N
Λ	May9/22	Dec9/22	Jun5/23	(May9/22 Jul15/22 Sep 9/22	0ct21/22 + Dec9/22 +	Jun5/23
1/1	May9/22 Jul15/22 Sep9/22 Oct21/22	Dec	Mar29/23 Jun5/23	2	May Jull	0ct21/22 Dec9/22 Mar29/23	Jun5/23 Aug28/23
v V	Aluminum (ppm)				Chromium (pp	ım)	
	12 10			6	Courses		
	8-				Abnormal		
/23	E 6 - Abnormal		1 1 1	A1 44			
Mar25/23 Jun5/23 Aug28/23	11	~	1	1 2	THE PERSON NEEDED		
			W/	V .	1 mm	m	~~~
	May9/22 - Jul15/22 - Sep9/22 - Oct21/22 -	Dec9/22 -	Mar29/23 . Jun5/23 .		May9/22 - Jul15/22 - Sep9/22 -	0ct21/22 - Dec9/22 - Mar29/23 -	Jun5/23 -
	Mar Juli Sep Oct2	Det	Mar. Jur	2	Ma Juli Sep	Der Mar2	Jur Aug2
	Copper (ppm)			400	Silicon (ppm)		
	Severe				10.010010		1
~~~~	15			300	A A A		1/
~	튭 10 -			톱 200	- galanoimai	AAN	$\land \forall$
	5 - Abnormal			100	V	VV WV	W
Jun5/23 Aug28/23		~	~~~~	$\sim$			• •
Jul	May9/22 Jul15/22 Sep9/22 Oct21/22	Dec9/22	Mar29/23 Jun5/23		May9/22 Jul15/22 Sep9/22	0ct21/22 Dec9/22 Mar29/23	Jun5/23 Aug28/23
			JL			D, D, Mar	Jı Auç
	Viscosity @ 100°C				Base Number		
	Abnormal			(B/H0			۸
	Base			9 6.0 Bu	Base	~^	14
	Abromat		~~~~		~~~~		N/
				(D)HOX 6.(. Base Number (mg KOH)			
	10			0.0	· · · · · · · · · · · · · · · · · · ·		
	May9/22 Jul15/22 Sep9/22 Oct21/22	Dec9/22	Mar29/23 Jun5/23		May9/22 Jul15/22 Sep9/22	0ct21/22 Dec9/22 Mar29/23	Jun5/23 Aug28/23
	Ma Jul See Oct	De	Mai	2	Ma Jul Se	De Mari	Ju Aug
Laboratory	: WearCheck USA - 5	01 Madi	son Ave Ca	ny NC 27519	2 51	DL NA Recips-E	Brown Coun
Sample No.		Received		Sep 2023		UNTY POWER STATIC	
Lab Number	: 05965526	Diagnos	ed : 02			GETOWN, C	
Unique Number		Diagnost		n Baldridge		_	US 451
Test Package	: MOB 2			<b>-</b>		Contact: MITCI	
his sample report, o	: MOB 2 contact Customer Servi re outside of the ISO 13				Ν	Contact: MITCI /litchell.Butler@	

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