

OIL ANALYSIS REPORT





NORMAL

BRCM02BE (S/N GZJ00659)

Biogas Engine

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

GAS ENGINE OIL (GAL)									
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2			
Sample Number		Client Info		WC0760987	WC0761002	WC0760998			
Sample Date		Client Info		18 Jul 2023	27 Jun 2023	12 Jun 2023			
Machine Age	hrs	Client Info		69322	68978	68636			
Oil Age	hrs	Client Info		82	91	546			
Oil Changed		Client Info		N/A	N/A	N/A			
Sample Status				NORMAL	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	1	4	4			
Chromium	ppm	ASTM D5185m	>4	0	0	<1			
Nickel	ppm	ASTM D5185m	>2	<1	<1	<1			
Titanium	ppm	ASTM D5185m		0	0	0			
Silver	ppm	ASTM D5185m	>5	0	0	0			
Aluminum	ppm	ASTM D5185m	>6	1	2	2			
Lead	ppm	ASTM D5185m	>9	2	4	3			
Copper	ppm	ASTM D5185m	>6	<1	2	<1			
Tin	ppm	ASTM D5185m	>4	2	5	5			
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		6	19	18			
Barium	ppm	ASTM D5185m		2	0	0			
Molybdenum	ppm	ASTM D5185m		7	12	12			
Manganese	ppm	ASTM D5185m		<1	<1	<1			
Magnesium	ppm	ASTM D5185m		28	56	67			
Calcium	ppm	ASTM D5185m		1756	1788	1879			
Phosphorus	ppm	ASTM D5185m		281	325	366			
Zinc				201	525				
	ppm	ASTM D5185m		346	414	451			
Sulfur	ppm ppm	ASTM D5185m ASTM D5185m							
Sulfur CONTAMINANTS	ppm		limit/base	346	414	451 2820			
Sulfur CONTAMINANTS Silicon	ppm	ASTM D5185m		346 1806	414 2328	451			
CONTAMINANTS	ppm S	ASTM D5185m method		346 1806 current	414 2328 history1	451 2820 history2			
CONTAMINANTS Silicon Sodium	ppm S ppm	ASTM D5185m method ASTM D5185m	>181	346 1806 current 64	414 2328 history1 216	451 2820 history2 • 214			
CONTAMINANTS Silicon Sodium	ppm S ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	>181	346 1806 current 64 0	414 2328 history1 216 0	451 2820 history2 214 1 2			
CONTAMINANTS Silicon Sodium Potassium	ppm S ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m	>181 >20	346 1806 current 64 0 1	414 2328 history1 216 0 2	451 2820 history2 214 1			
CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm 5 ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m method	>181 >20 limit/base	346 1806 current 64 0 1 current	414 2328 history1 216 0 2 2 history1	451 2820 history2 214 1 2 history2			
CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm 5 ppm ppm ppm %	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844	>181 >20 limit/base	346 1806 current 64 0 1 current 0.1	414 2328 history1 • 216 0 2 2 history1 0.1	451 2820 history2 214 1 2 history2 0.1			
CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm pm v v Abs/cm Abs/.1mm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844 *ASTM D7624	>181 >20 limit/base >20	346 1806 current 64 0 1 1 current 0.1 5.4	414 2328 history1 ● 216 0 2 history1 0.1 6.9	451 2820 history2 214 1 2 history2 0.1 6.3 20.1			
CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm pm v v Abs/cm Abs/.1mm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844 *ASTM D7624	>181 >20 limit/base >20 >30	346 1806 current 64 0 1 current 0.1 5.4 15.5	414 2328 history1 216 0 2 history1 0.1 6.9 19.8	451 2820 history2 214 1 2 history2 0.1 6.3 20.1			
CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm v v Abs/cm Abs/cm Abs/1mm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844 *ASTM D7624 *ASTM D7624 *ASTM D7415	>181 >20 limit/base >20 >30 limit/base	346 1806 current 64 0 1 1 current 0.1 5.4 15.5 current	414 2328 history1 ● 216 0 2 2 history1 0.1 6.9 19.8 history1	451 2820 history2 ● 214 1 2 history2 0.1 6.3 20.1 history2			

Recommendation

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

Wear

All component wear rates are normal.

Contamination

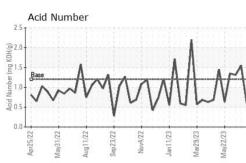
There is no indication of any contamination in the oil.

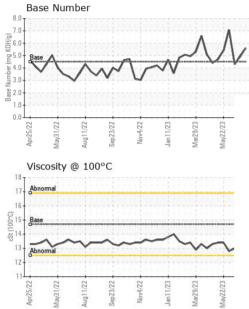
Fluid Condition

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



OIL ANALYSIS REPORT





	VISUAL		method	limit/base	current	history1	history2	
	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
A AAAA	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE	
	Silt	scalar	*Visual	NONE	NONE	NONE	NONE	
VUVIUMII	Debris	scalar	*Visual	NONE	NONE	NONE	NONE	
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE	
Sep 23/22 Nov4/22 Jan 11/23 Mar 29/23 Mar 22/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
Sep Jan Mar	Odor	scalar	*Visual	NORML	NORML	NORML	NORML	
	Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG	
	Free Water	scalar	*Visual		NEG	NEG	NEG	
ΛΛ.	FLUID PROPERT	IES	method	limit/base	current	history1	history2	
NV NV	Visc @ 100°C	cSt	ASTM D445	14.7	12.9	13.1	13.0	
VVV	GRAPHS							
	Iron (ppm)				Lead (ppm)			
3 3 5 5	25 20 Severe			15	Severe			
Sep 23/22 Nov4/22 Jan 11/23 Mar 29/23 Mar 22/23	Abnormal			10	Abnormal			
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	Apr25/22 . May31/22 . Aug11/22 . Sep23/22 .	Nov4/22	Jan 11/23 Mar29/23 Mav22/23		Apr25/22 May31/22 Aug11/22	Sep 23/22 Nov4/22 Jan 11/23	Mar29/23 May22/23	
		No	Jan Mar		-		Mar	
	Aluminum (ppm)			6	Chromium (pp	m)		
	Severe			5	Severe			
	10-			4 E				
Sep23/22 Nov4/22 Jan11/23 Mar29/23 May22/23	Abnormal			E 3				
Sepi. Jan1 Marź May2	mnn.	~			1			
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	Apr25/22 May31/22 Aug11/22 Sep23/22	Nov4/22	Jan 11/23 Mar 29/23 Mav 22/23		Apr25/22 May31/22 Aug11/22	Sep23/22 Nov4/22 Jan11/23	Mar29/23 May22/23	
	-	2	J, Mi Ma			Se Ja	M.	
	Copper (ppm)			600	Silicon (ppm)			
	20			500	A			
8	15 - Severe			400 톮 300				
	10- Abnormal			<u>음</u> 300 200		A . A .	A.m.	
	5- Abnormal			100	M	VVVV	WVI	
		222	22 23	0	22	22	23	
	Apr25/22 May31/22 Aug11/22 Sep23/22	Nov4/22	Jan 1 1/23 Mar29/23 Mav22/23		Apr25/22 May31/22 Aug11/22	Sep 23/22 Nov4/22 Jan 11/23	Mar29/23 May22/23	
	Viscosity @ 100°C		2		Sase Number		- 2	
	18 Abnormal			.0 ©				
-	16			(D)HOX but HOX but Base Number Base S			ΛΛ.	
	Base 14		~	ຍັ ສູ 4.0	Base	mm	EVV	
đ	Abnormal		~~~	Yunny 2.0		• • •		
	10			88 0.0				
	Apr25/22 May31/22 Aug11/22 Sep23/22	Nov4/22	Jan 11/23 - Mar 29/23 -		Apr25/22 May31/22 Aug11/22	Sep23/22 - Nov4/22 - Jan11/23 -	Mar29/23 -	
	Apr2 May3 Aug1 Sep2	Nov	Jan 1 1/23 Mar 29/23 Mav 22/23		Apr2 May3 Aug1	Sep2 Nov Jan1	Mar29/23 May22/23	
L abaratary		01 Madi				NA Desina I	Proven County	
Laboratory Sample No.	: WearCheck USA - 5 : WC0760987 F	01 Madi: Receive		ry, NC 27513 Jul 2023		L NA Recips-I UNTY POWER STATION		
Lab Number		Diagnos		Jul 2023	2.10.111.00		GETOWN, OH	
Unique Number		Diagnost	tician : Ang	jela Borella			US 45121	
Certificate L2367 Test Package	: MOB 2 contact Customer Service at 1-800-237-1369.				Contact: MITCHELL BUTLER Mitchell.Butler@edlenergy.com			
* - Denotes test methods that a					IV	internerit. Dutier@	edienergy.com T:	
Statements of conformity to speci					JCGM 106:2012)		F:	