

# **OIL ANALYSIS REPORT**

## Sample Rating Trend







# Coopersville CAT 4 CPVM04BE Component Biogas Engine Fluid Machine Id

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

## DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the

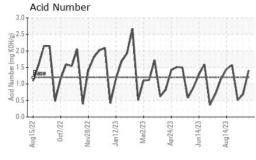
### Fluid Condition

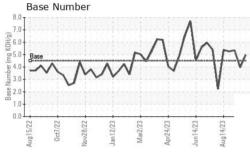
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

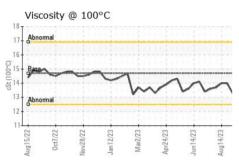
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0819462	WC0819468	WC0819472
Sample Date		Client Info		18 Sep 2023	08 Sep 2023	30 Aug 2023
Machine Age	hrs	Client Info		75260	75025	74812
Oil Age	hrs	Client Info		448	213	1
Oil Changed		Client Info		Not Changd	Not Changd	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	V	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	1	2
Chromium	ppm	ASTM D5185m	>4	<1	0	<1
Nickel	ppm	ASTM D5185m	>2	1	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5185m	>6	4	<1	3
Lead	ppm	ASTM D5185m	>9	2	<1	<1
Copper	ppm	ASTM D5185m	>14	2	2	2
Tin	ppm	ASTM D5185m	>4	6	3	1
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	history1	history2 0
	ppm		limit/base			•
Boron		ASTM D5185m	limit/base	<1	0	0
Boron Barium	ppm	ASTM D5185m ASTM D5185m	limit/base	<1 1	0	0 2
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	<1 1 0	0 0 1	0 2 <1
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	<1 1 0 <1	0 0 1 <1	0 2 <1 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	<1 1 0 <1 9	0 0 1 <1 3	0 2 <1 <1 6
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	<1 1 0 <1 9 2412	0 0 1 <1 <1 3 1930	0 2 <1 <1 6 1715
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	<1 1 0 <1 9 2412 349	0 0 1 <1 3 1930 273	0 2 <1 <1 6 1715 246
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 ASTM D5185m	limit/base	<1 1 0 <1 9 2412 349 457	0 0 1 <1 3 1930 273 313	0 2 <1 <1 6 1715 246 308
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 ASTM D5185m	limit/base	<1 1 0 <1 9 2412 349 457 2733	0 0 1 <1 3 1930 273 313 1944	0 2 <1 <1 6 1715 246 308 1727
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base	<1 1 0 <1 9 2412 349 457 2733	0 0 1 <1 3 1930 273 313 1944 history1	0 2 <1 <1 6 1715 246 308 1727 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base >181	<1 1 0 <1 9 2412 349 457 2733  current	0 0 1 <1 3 1930 273 313 1944 history1	0 2 <1 <1 6 1715 246 308 1727 history2 29
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base >181	<1 1 0 <1 9 2412 349 457 2733  current 164 0	0 0 1 <1 3 1930 273 313 1944 history1 83	0 2 <1 <1 6 1715 246 308 1727 history2 29 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base >181 >20	<1 1 0 <1 9 2412 349 457 2733 current 164 0 1 current	0 0 1 <1 3 1930 273 313 1944 history1 83 <1	0 2 <1 <1 6 1715 246 308 1727 history2 29 0 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	limit/base >181 >20 limit/base	<1 1 0 <1 9 2412 349 457 2733 current 164 0 1 current	0 0 1 <1 3 1930 273 313 1944 history1 83 <1 0 history1	0 2 <1 <1 6 1715 246 308 1727 history2 29 0 2
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  method  *ASTM D5185m  *ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D5185m  *ASTM D5185m  *ASTM D5185m	limit/base >181 >20 limit/base	<1 1 0 <1 9 2412 349 457 2733 current 164 0 1 current	0 0 1 <1 3 1930 273 313 1944 history1 83 <1 0 history1 0	0 2 <1 <1 <1 6 1715 246 308 1727 history2 29 0 2 history2 0
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  method  *ASTM D5185m ASTM D5185m	limit/base >181 >20 limit/base >20	<1 1 0 <1 9 2412 349 457 2733  current 164 0 1  current 0 7.2	0 0 1 <1 3 1930 273 313 1944 history1 83 <1 0 history1 0 6.3	0 2 <1 <1 <1 6 1715 246 308 1727 history2 29 0 2 history2 0 5.0
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  Method  *ASTM D5185m ASTM D7844  *ASTM D7624  *ASTM D7415	limit/base >181 >20 limit/base >20 >30	<1 1 0 <1 9 2412 349 457 2733  current 164 0 1  current 0 7.2 19.6	0 0 1 <1 3 1930 273 313 1944 history1 83 <1 0 history1 0 6.3 17.4	0 2 <1 <1 6 1715 246 308 1727 history2 29 0 2 history2 0 5.0 15.1
Boron 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  method  *ASTM D7844  *ASTM D7624  *ASTM D7415  method	limit/base >181 >20 limit/base >20 >30 limit/base	<1 1 0 <1 9 2412 349 457 2733  current 164 0 1  current 0 7.2 19.6  current	0 0 1 <1 3 1930 273 313 1944 history1 83 <1 0 history1 0 6.3 17.4 history1	0 2 <1 <1 6 1715 246 308 1727 history2 29 0 2 history2 0 5.0 15.1 history2



# **OIL ANALYSIS REPORT**



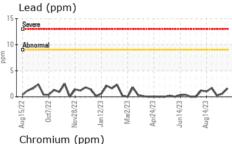


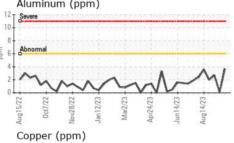


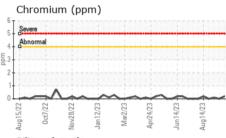
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.1	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

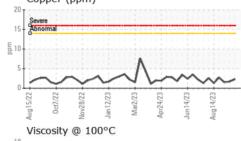
LLUID PHOPER	THES	memod			riistory i	HISTORYZ
Visc @ 100°C	cSt	ASTM D445	14.7	13.9	13.5	13.3

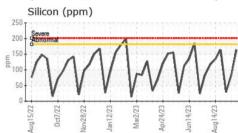
Severe	F F F F F F F F F F				
Abnormal	4	1			
	1	/			
1	IVV	1	1		
. ~			<b>'</b> -V	$\sim$	<b>V</b>
	Nov28/22	an 12/23	Apr24/23	Jun14/23	6.3

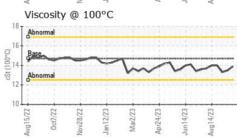


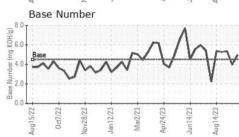
















Certificate L2367

Laboratory Sample No.

Lab Number **Unique Number** Test Package : MOB 2

: WC0819462 : 05960759 : 10661972

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 25 Sep 2023 : 27 Sep 2023 Diagnosed Diagnostician : Don Baldridge

**EDL NA Recips-Coopersville** 

Coopersville Powerstation, 15362 68th Avenue Coopersville, MI US 49404

Contact: Daniel Young daniel.young@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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F: