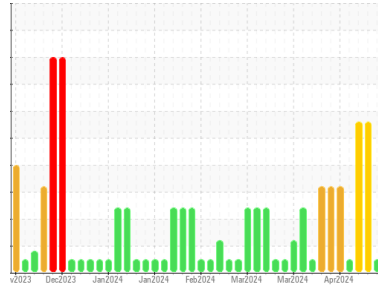




# OIL ANALYSIS REPORT

Sample Rating Trend



**NORMAL**



Machine Id  
**WVTM02BE**  
 Component  
**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 acceptable for the time in service.

## SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		<b>WC0839350</b>	WC0839353	WC0839333
Sample Date	Client Info		<b>15 Jul 2024</b>	10 Jul 2024	02 Jul 2024
Machine Age	hrs	Client Info	<b>47155</b>	47035	46849
Oil Age	hrs	Client Info	<b>116</b>	690	505
Oil Changed	Client Info		<b>N/A</b>	Changed	Not Chngd
Sample Status			<b>NORMAL</b>	SEVERE	ABNORMAL

## CONTAMINATION

	method	limit/base	current	history1	history2
Fuel	WC Method	>4.0	<b>&lt;1.0</b>	<1.0	<1.0
Water	WC Method		<b>NEG</b>	NEG	NEG
Glycol	WC Method		<b>NEG</b>	NEG	NEG

## WEAR METALS

	method	limit/base	current	history1	history2
PQ	ASTM D8184		<b>18</b>	18	19
Iron	ppm	ASTM D5185m >14	<b>2</b>	10	▲ 12
Chromium	ppm	ASTM D5185m >3	<b>&lt;1</b>	<1	1
Nickel	ppm	ASTM D5185m	<b>&lt;1</b>	0	<1
Titanium	ppm	ASTM D5185m	<b>&lt;1</b>	<1	<1
Silver	ppm	ASTM D5185m	<b>0</b>	0	<1
Aluminum	ppm	ASTM D5185m >5	<b>3</b>	3	3
Lead	ppm	ASTM D5185m >8	<b>&lt;1</b>	<1	2
Copper	ppm	ASTM D5185m >5	<b>&lt;1</b>	2	3
Tin	ppm	ASTM D5185m >3	<b>1</b>	▲ 5	▲ 5
Vanadium	ppm	ASTM D5185m	<b>0</b>	0	<1
Cadmium	ppm	ASTM D5185m	<b>&lt;1</b>	0	<1

## ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	<b>90</b>	29	35
Barium	ppm	ASTM D5185m	<b>&lt;1</b>	0	0
Molybdenum	ppm	ASTM D5185m	<b>7</b>	7	9
Manganese	ppm	ASTM D5185m	<b>&lt;1</b>	0	<1
Magnesium	ppm	ASTM D5185m	<b>48</b>	55	63
Calcium	ppm	ASTM D5185m	<b>1509</b>	1691	1683
Phosphorus	ppm	ASTM D5185m	<b>394</b>	422	409
Zinc	ppm	ASTM D5185m	<b>563</b>	622	647
Sulfur	ppm	ASTM D5185m	<b>4150</b>	6383	5089

## CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >180	<b>49</b>	▲ 180	▲ 193
Sodium	ppm	ASTM D5185m >20	<b>0</b>	<1	0
Potassium	ppm	ASTM D5185m >20	<b>1</b>	<1	2

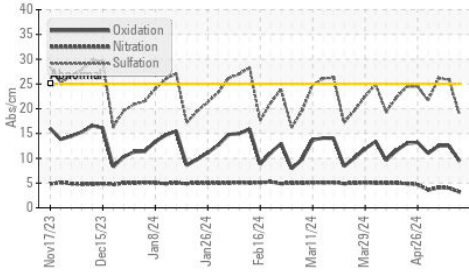
## INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	<b>0</b>	0.1	0.1
Nitration	Abs/cm	*ASTM D7624	<b>3.2</b>	4.0	4.1
Sulfation	Abs/.1mm	*ASTM D7415	<b>18.7</b>	25.9	26.1

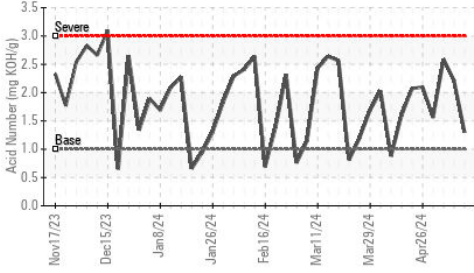


# OIL ANALYSIS REPORT

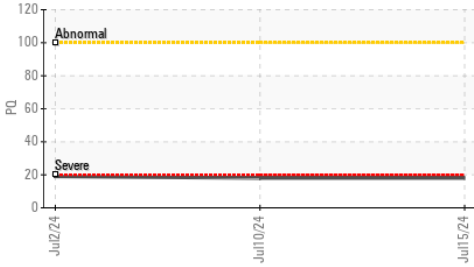
FT-IR (Direct Trend)



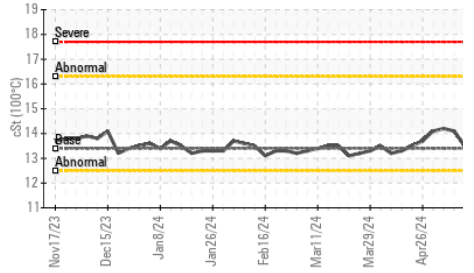
Acid Number



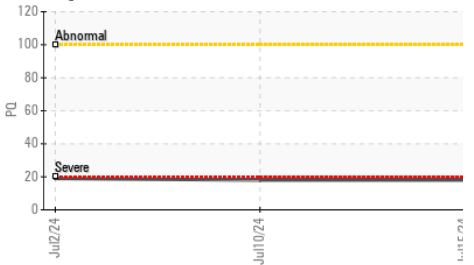
PQ



Viscosity @ 100°C



PQ



**FLUID DEGRADATION**

	method	limit/base	current	history1	history2
Oxidation	Abs./1mm	*ASTM D7414	<b>9.4</b>	12.5	12.5
Acid Number (AN)	mg KOH/g	ASTM D8045	<b>1.30</b>	2.21	▲ 2.59
Base Number (BN)	mg KOH/g	ASTM D2896	<b>4.11</b>	▲ 2.22	▲ 2.39

**VISUAL**

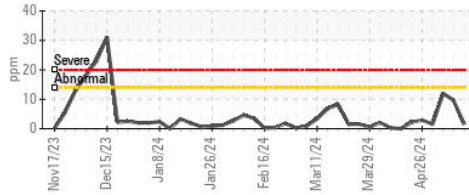
	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	<b>NONE</b>	NONE	NONE
Precipitate	scalar	*Visual	<b>NONE</b>	NONE	NONE
Silt	scalar	*Visual	<b>NONE</b>	NONE	NONE
Debris	scalar	*Visual	<b>NONE</b>	NONE	NONE
Sand/Dirt	scalar	*Visual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

**FLUID PROPERTIES**

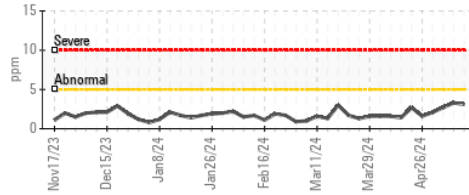
	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	<b>13.4</b>	13.5	14.1

**GRAPHS**

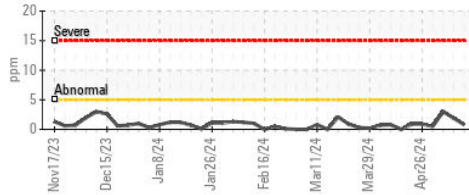
Iron (ppm)



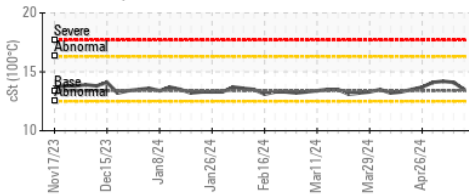
Aluminum (ppm)



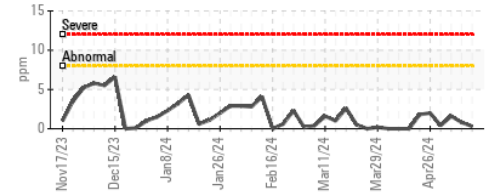
Copper (ppm)



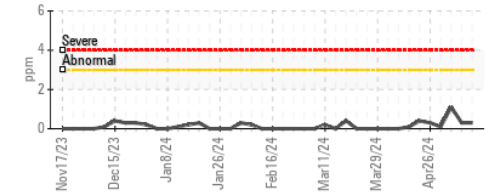
Viscosity @ 100°C



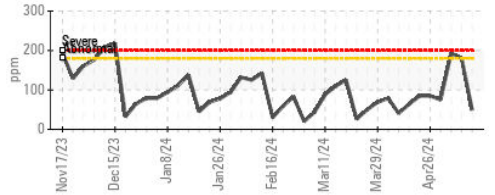
Lead (ppm)



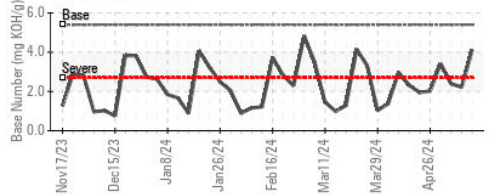
Chromium (ppm)



Silicon (ppm)



Base Number



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513

**Sample No.** : WC0839350

**Lab Number** : 06239310

**Unique Number** : 11128144

**Test Package** : MOB 2 ( Additional Tests: PQ )

**Received** : 17 Jul 2024

**Tested** : 18 Jul 2024

**Diagnosed** : 19 Jul 2024 - Sean Felton

**EDL NA Recips-Watervliet**

Watervliet Powerstation, 3563 Hennessey Road

Watervliet, MI

US 49098

Contact: Scott Eastman

scott.eastman@edlenergy.com

T:

F:

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)