

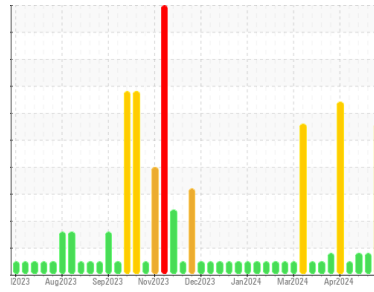


# OIL ANALYSIS REPORT



Machine Id  
**Byron Center CAT 1 BYCM01BE**  
 Component  
**Biogas Engine**  
 Fluid  
**CHEVRON HDAX 9500 GAS ENGINE OIL 40 (--- GAL)**

Sample Rating Trend



**DIRT**



## DIAGNOSIS

### ▲ Recommendation

We recommend that you drain the oil and perform a filter service on this component if not already done. We recommend an early resample to monitor this condition.

### ▲ Wear

The tin level is abnormal.

### ▲ Contamination

Elemental level of silicon (Si) above normal indicating ingress of seal material.

### Fluid Condition

The BN level is low. The AN level is acceptable for this fluid.

## SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		<b>WC0877020</b>	WC0877042	WC0877039
Sample Date	Client Info		<b>07 Jun 2024</b>	28 May 2024	17 May 2024
Machine Age	hrs	Client Info	<b>88522</b>	88317	88067
Oil Age	hrs	Client Info	<b>715</b>	504	258
Oil Changed	Client Info		<b>N/A</b>	N/A	N/A
Sample Status			<b>SEVERE</b>	ABNORMAL	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>22</b>	---	---
Iron	ppm	ASTM D5185m >14	<b>7</b>	2	4
Chromium	ppm	ASTM D5185m >3	<b>&lt;1</b>	0	<1
Nickel	ppm	ASTM D5185m	<b>0</b>	0	<1
Titanium	ppm	ASTM D5185m	<b>&lt;1</b>	0	<1
Silver	ppm	ASTM D5185m	<b>0</b>	0	<1
Aluminum	ppm	ASTM D5185m >5	<b>3</b>	2	2
Lead	ppm	ASTM D5185m >8	<b>&lt;1</b>	0	<1
Copper	ppm	ASTM D5185m >5	<b>2</b>	<1	2
Tin	ppm	ASTM D5185m >3	<b>▲ 5</b>	▲ 4	▲ 3
Vanadium	ppm	ASTM D5185m	<b>&lt;1</b>	0	<1
Cadmium	ppm	ASTM D5185m	<b>0</b>	0	<1

## ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	<b>73</b>	79	43
Barium	ppm	ASTM D5185m	<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185m	<b>11</b>	8	10
Manganese	ppm	ASTM D5185m	<b>&lt;1</b>	<1	<1
Magnesium	ppm	ASTM D5185m	<b>67</b>	41	22
Calcium	ppm	ASTM D5185m	<b>1919</b>	1727	1782
Phosphorus	ppm	ASTM D5185m	<b>417</b>	364	350
Zinc	ppm	ASTM D5185m	<b>562</b>	462	393
Sulfur	ppm	ASTM D5185m	<b>5623</b>	4485	4164

## CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >180	<b>▲ 201</b>	166	116
Sodium	ppm	ASTM D5185m >20	<b>2</b>	<1	0
Potassium	ppm	ASTM D5185m >20	<b>2</b>	<1	5

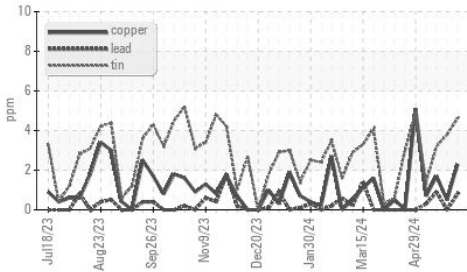
## INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	<b>0.1</b>	0	0.1
Nitration	Abs/cm	*ASTM D7624	<b>5.3</b>	5.5	5.5
Sulfation	Abs/.1mm	*ASTM D7415	<b>26.3</b>	25.0	21.5

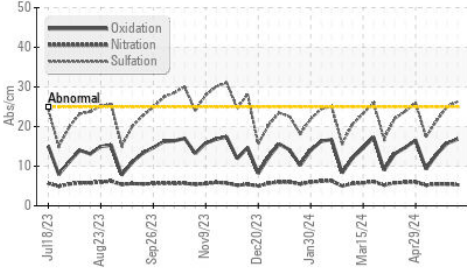


# OIL ANALYSIS REPORT

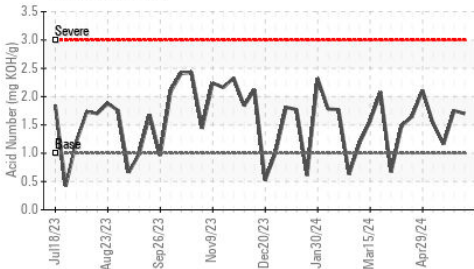
## Non-ferrous Metals



## FT-IR (Direct Trend)



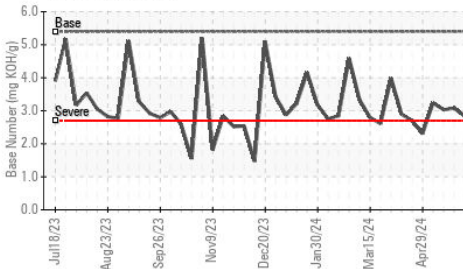
## Acid Number



## PQ



## Base Number



## FLUID DEGRADATION

	method	limit/base	current	history1	history2
Oxidation	Abs./1mm	*ASTM D7414	<b>16.8</b>	15.8	13.0
Acid Number (AN)	mg KOH/g	ASTM D8045	<b>1.70</b>	1.75	1.16
Base Number (BN)	mg KOH/g	ASTM D2896	<b>2.84</b>	3.08	3.03

## VISUAL

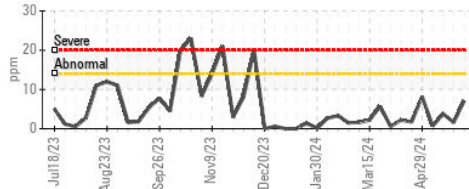
	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	<b>NONE</b>	NONE	NONE
Precipitate	scalar	*Visual	<b>NONE</b>	NONE	NONE
Silt	scalar	*Visual	<b>NONE</b>	NONE	NONE
Debris	scalar	*Visual	<b>NONE</b>	NONE	NONE
Sand/Dirt	scalar	*Visual	<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

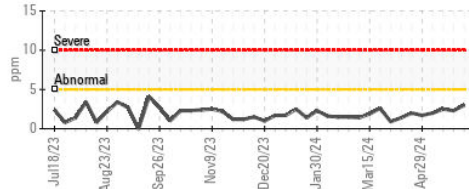
	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	<b>14.2</b>	14.1	13.6

## GRAPHS

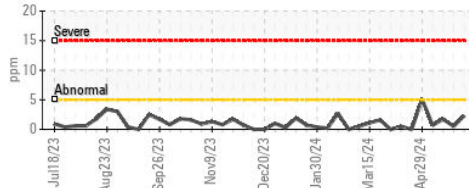
### Iron (ppm)



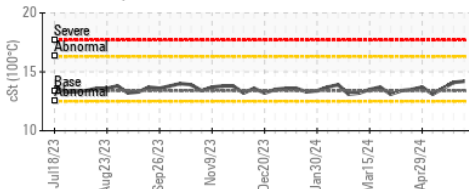
### Aluminum (ppm)



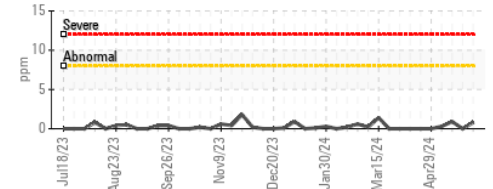
### Copper (ppm)



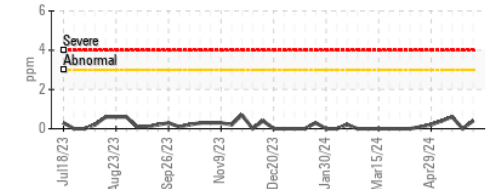
### Viscosity @ 100°C



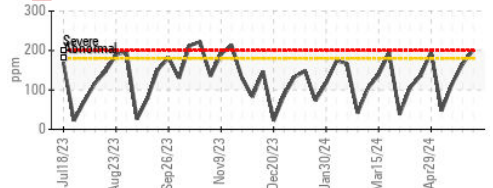
### Lead (ppm)



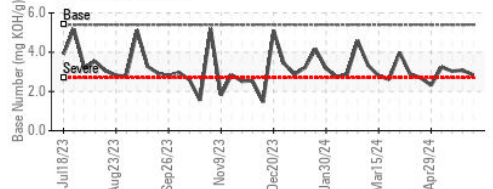
### Chromium (ppm)



### Silicon (ppm)



### Base Number



Certificate L2367

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

Sample No. : WC0877020

Lab Number : 06204875

Unique Number : 11072336

Test Package : MOB 2 ( Additional Tests: pq )

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)

Received : 10 Jun 2024

Tested : 12 Jun 2024

Diagnosed : 12 Jun 2024 - Angela Borella

EDL NA Recips-Byron Center

Byron Center Powerstation, 10310 South Kent Road

Byron Center, MI

US 49315

Contact: Jake Ripke

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T:

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