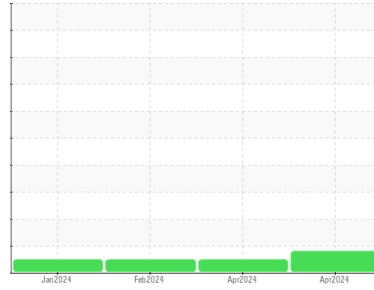




OIL ANALYSIS REPORT

Machine Id
Byron Center CAT 3 BYCM03BE
 Component
Biogas Engine
 Fluid
CHEVRON HDAX 9500 GAS ENGINE OIL 40 (--- GAL)

Sample Rating Trend



WEAR



DIAGNOSIS

▲ Recommendation

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

▲ Wear

The tin 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.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		WC0877018	WC0877016	WC0877006
Sample Date	Client Info		19 Apr 2024	12 Apr 2024	11 Feb 2024
Machine Age	hrs	Client Info	67202	67039	66804
Oil Age	hrs	Client Info	400	235	469
Oil Changed		Client Info	N/A	N/A	N/A
Sample Status			ABNORMAL	NORMAL	NORMAL

CONTAMINATION

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

WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m >14	<1	2	<1
Chromium	ppm	ASTM D5185m >3	<1	0	0
Nickel	ppm	ASTM D5185m	0	0	0
Titanium	ppm	ASTM D5185m	0	0	0
Silver	ppm	ASTM D5185m	0	0	0
Aluminum	ppm	ASTM D5185m >5	2	1	<1
Lead	ppm	ASTM D5185m >8	0	0	0
Copper	ppm	ASTM D5185m >5	0	1	<1
Tin	ppm	ASTM D5185m >3	▲ 3	<1	1
Vanadium	ppm	ASTM D5185m	0	<1	0
Cadmium	ppm	ASTM D5185m	0	0	0

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	3	2	0
Barium	ppm	ASTM D5185m	0	0	0
Molybdenum	ppm	ASTM D5185m	1	2	<1
Manganese	ppm	ASTM D5185m	<1	<1	0
Magnesium	ppm	ASTM D5185m	29	23	6
Calcium	ppm	ASTM D5185m	1660	1590	1816
Phosphorus	ppm	ASTM D5185m	278	241	261
Zinc	ppm	ASTM D5185m	320	263	320
Sulfur	ppm	ASTM D5185m	3021	2237	2341

CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >180	130	85	122
Sodium	ppm	ASTM D5185m >20	2	2	<1
Potassium	ppm	ASTM D5185m >20	3	<1	<1

INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	0	0	0
Nitration	Abs/cm	*ASTM D7624	4.9	4.9	5.0
Sulfation	Abs/.1mm	*ASTM D7415	18.8	17.2	17.6

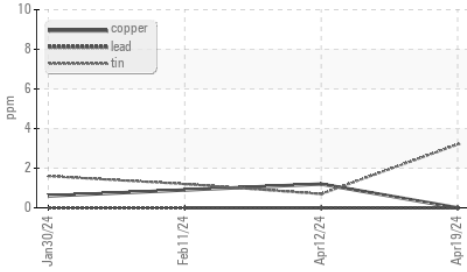
FLUID DEGRADATION

	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	8.9	8.3	8.4
Acid Number (AN)	mg KOH/g	ASTM D8045 1.0	0.99	0.808	0.84
Base Number (BN)	mg KOH/g	ASTM D2896 5.4	3.29	3.87	3.65

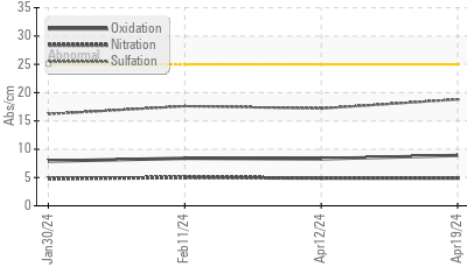


OIL ANALYSIS REPORT

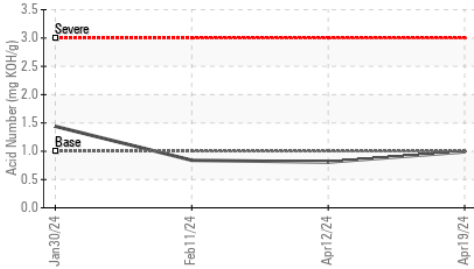
▲ Non-ferrous Metals



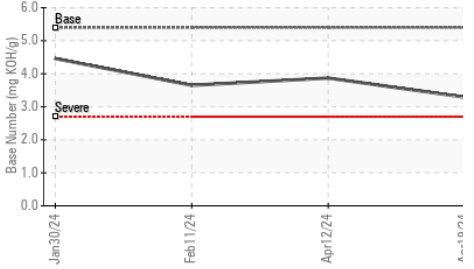
FT-IR (Direct Trend)



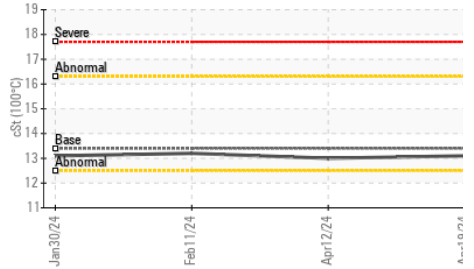
Acid Number



Base Number



Viscosity @ 100°C

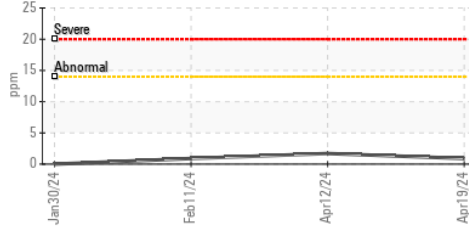


VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance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

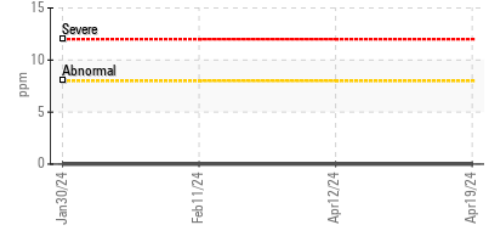
FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	13.4	13.1	13.0

GRAPHS

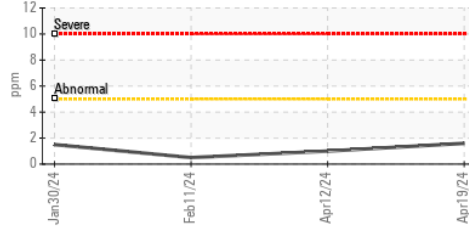
Iron (ppm)



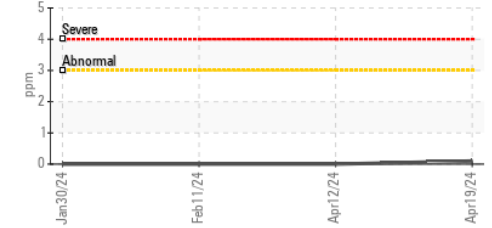
Lead (ppm)



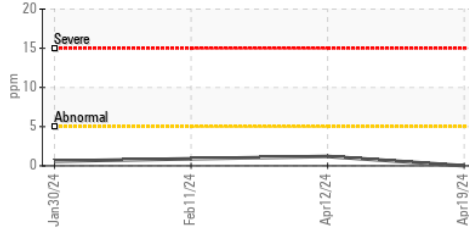
Aluminum (ppm)



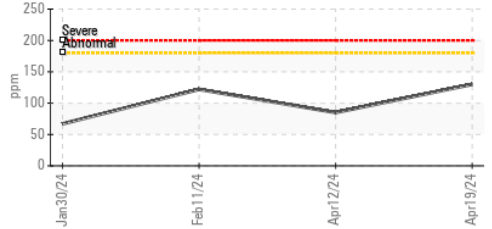
Chromium (ppm)



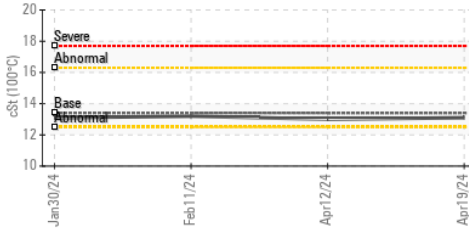
Copper (ppm)



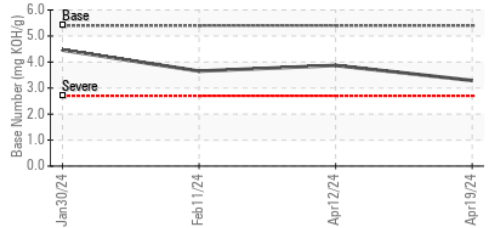
Silicon (ppm)



Viscosity @ 100°C



Base Number



Certificate L2367

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

Sample No. : WC0877018

Lab Number : 06157835

Unique Number : 10993258

Test Package : MOB 2

Received : 23 Apr 2024

Tested : 24 Apr 2024

Diagnosed : 25 Apr 2024 - Don Baldrige

EDL NA Recips-Byron Center

Byron Center Powerstation, 10310 South Kent Road

Byron Center, MI

US 49315

Contact: Jake Ripke

Jake.Ripke@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)