



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	ABNORMAL



Machine Id
Byron Center CAT 2 BYCM02BE
Component
Biogas Engine
Fluid
CHEVRON HDAX 9500 GAS ENGINE OIL 40 (--- GAL)

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.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0877012	WC0877009	WC0877005
Sample Date		Client Info		27 Feb 2024	16 Feb 2024	11 Feb 2024
Machine Age	hrs	Client Info		107221	106968	106782
Oil Age	hrs	Client Info		575	318	140
Filter Age	hrs	Client Info		257	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Filter Changed		Client Info		N/A	N/A	N/A
Sample Status				ABNORMAL	ABNORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>15	3	4	<1
Chromium	ppm	ASTM D5185m	>4	<1	<1	0
Nickel	ppm	ASTM D5185m	>2	<1	0	0
Titanium	ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5185m	>6	2	3	<1
Lead	ppm	ASTM D5185m	>9	3	2	0
Copper	ppm	ASTM D5185m	>6	<1	2	0
Tin	ppm	ASTM D5185m	>4	4	4	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

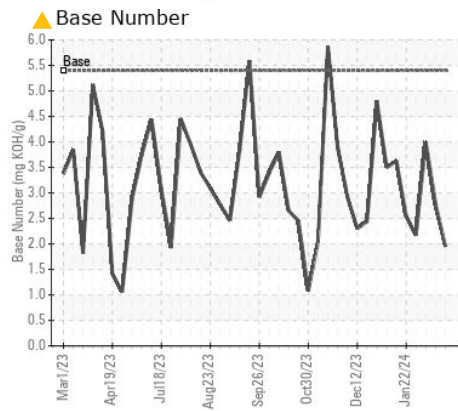
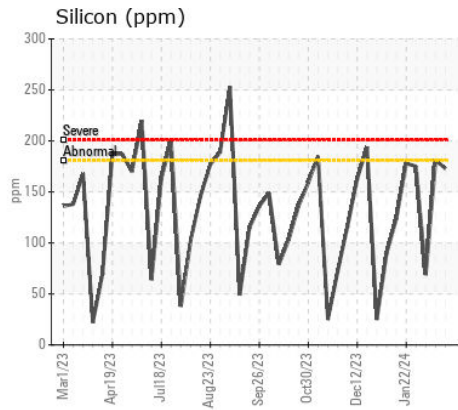
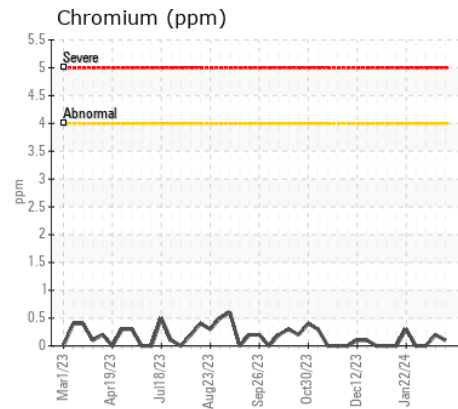
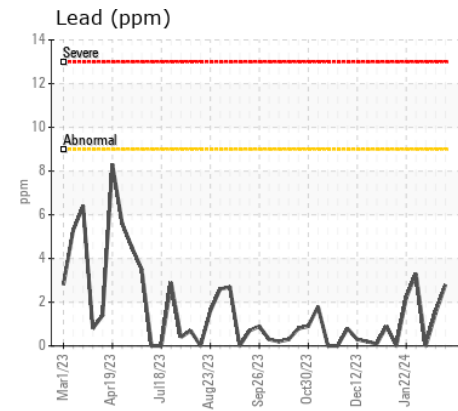
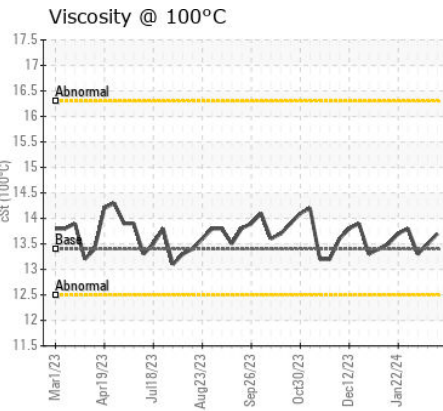
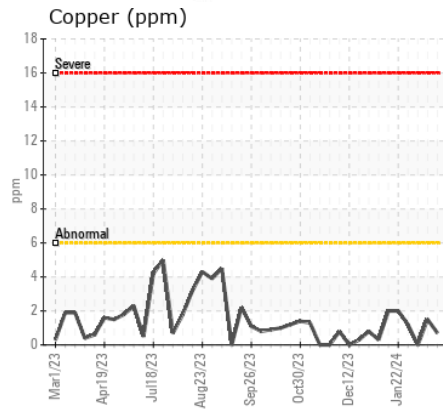
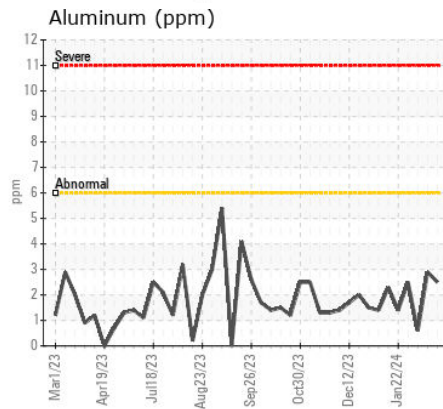
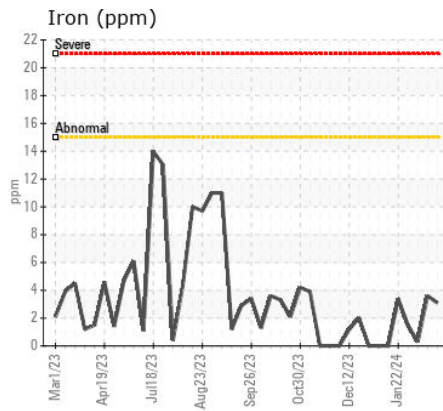
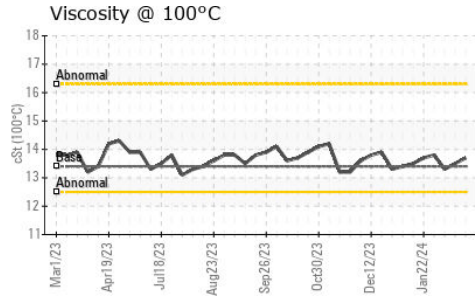
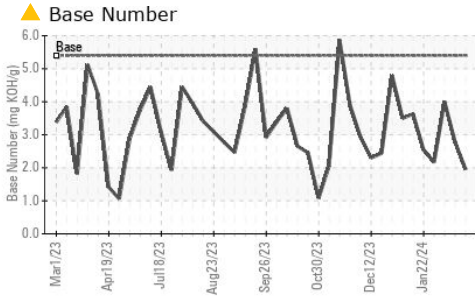
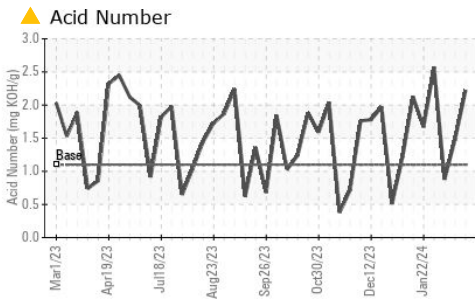
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>181	173	▲ 181	69
Potassium	ppm	ASTM D5185m	>20	<1	3	0
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Water		WC Method	>0.1	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844		0.1	0.1	0
Nitration	Abs/cm	*ASTM D7624	>20	6.0	5.9	5.7
Sulfation	Abs/.1mm	*ASTM D7415	>30	25.3	22.5	18.7
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
Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG

FLUID CONDITION

The BN level is low. The AN level is at the top-end of the recommended limit.

Sodium	ppm	ASTM D5185m		0	0	<1
Boron	ppm	ASTM D5185m		2	1	0
Barium	ppm	ASTM D5185m		0	10	0
Molybdenum	ppm	ASTM D5185m		1	2	<1
Manganese	ppm	ASTM D5185m		<1	0	0
Magnesium	ppm	ASTM D5185m		12	13	5
Calcium	ppm	ASTM D5185m		2147	2552	1900
Phosphorus	ppm	ASTM D5185m		299	463	269
Zinc	ppm	ASTM D5185m		387	484	329
Sulfur	ppm	ASTM D5185m		3201	4380	2326
Oxidation	Abs/.1mm	*ASTM D7414	>25	17.2	14.2	10.6
Acid Number (AN)	mg KOH/g	ASTM D8045	1.1	▲ 2.22	1.48	0.88
Base Number (BN)	mg KOH/g	ASTM D2896	5.4	▲ 1.95	2.78	4.00
Visc @ 100°C	cSt	ASTM D445	13.4	13.7	13.5	13.3



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0877012
Lab Number : 06104512
Unique Number : 10902742
Test Package : MOB 2

Received : 29 Feb 2024
Tested : 01 Mar 2024
Diagnosed : 04 Mar 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

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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