



OIL ANALYSIS REPORT

WEAR	SEVERE
CONTAMINATION	NORMAL
FLUID CONDITION	ABNORMAL



Machine Id
WVTM03BE

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 advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0895526	WC0895548	WC0785397
Sample Date		Client Info		18 Mar 2024	05 Mar 2024	21 Feb 2024
Machine Age	hrs	Client Info		34081	33859	33548
Oil Age	hrs	Client Info		713	491	180
Filter Age	hrs	Client Info		713	491	180
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Filter Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				SEVERE	NORMAL	NORMAL

WEAR

The iron level is severe.

Iron	ppm	ASTM D5185m	>15	▲ 23	11	3
Chromium	ppm	ASTM D5185m	>4	0	0	0
Nickel	ppm	ASTM D5185m	>2	0	0	<1
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5185m	>6	2	2	2
Lead	ppm	ASTM D5185m	>9	0	0	<1
Copper	ppm	ASTM D5185m	>14	<1	<1	<1
Tin	ppm	ASTM D5185m	>4	2	1	1
Vanadium	ppm	ASTM D5185m		0	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.

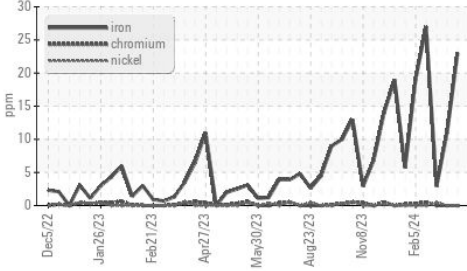
Silicon	ppm	ASTM D5185m	>181	123	89	40
Potassium	ppm	ASTM D5185m	>20	0	0	<1
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Water		WC Method	>0.1	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844		0	0	0
Nitration	Abs/cm	*ASTM D7624	>20	5.0	4.9	5.0
Sulfation	Abs/.1mm	*ASTM D7415	>30	24.8	21.7	17.9
Silt	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

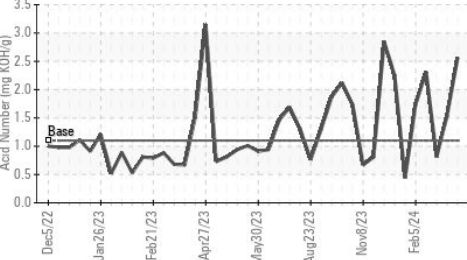
The AN level is above the recommended limit. The BN level is low.

Sodium	ppm	ASTM D5185m		4	4	3
Boron	ppm	ASTM D5185m		<1	1	2
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		1	2	<1
Manganese	ppm	ASTM D5185m		0	0	<1
Magnesium	ppm	ASTM D5185m		4	4	8
Calcium	ppm	ASTM D5185m		1777	1712	1580
Phosphorus	ppm	ASTM D5185m		266	261	251
Zinc	ppm	ASTM D5185m		322	297	306
Sulfur	ppm	ASTM D5185m		4899	3634	2468
Oxidation	Abs/.1mm	*ASTM D7414	>25	11.6	9.8	8.1
Acid Number (AN)	mg KOH/g	ASTM D8045	1.1	▲ 2.56	1.54	0.81
Base Number (BN)	mg KOH/g	ASTM D2896	5.4	▲ 0.79	2.67	3.80
Visc @ 100°C	cSt	ASTM D445	13.4	13.4	13.3	13.2

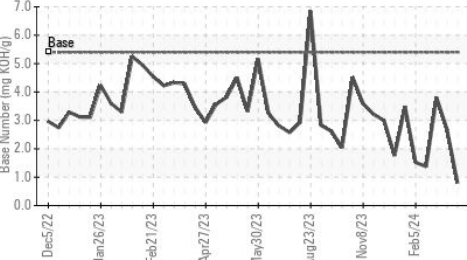
▲ Ferrous Alloys



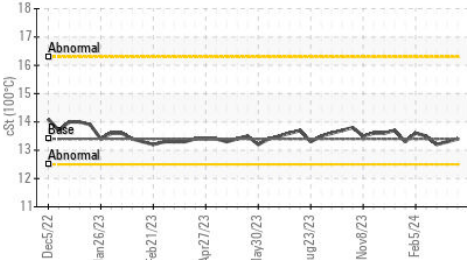
▲ Acid Number



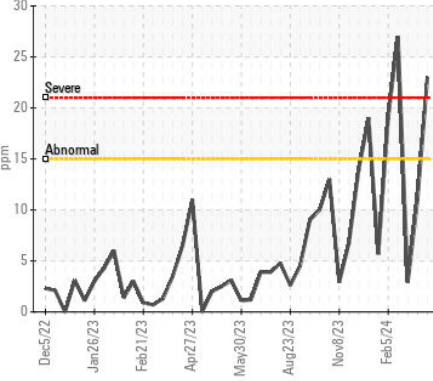
▲ Base Number



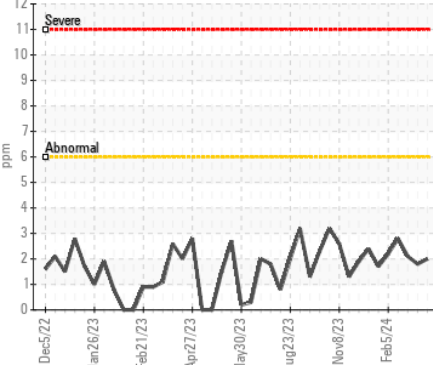
Viscosity @ 100°C



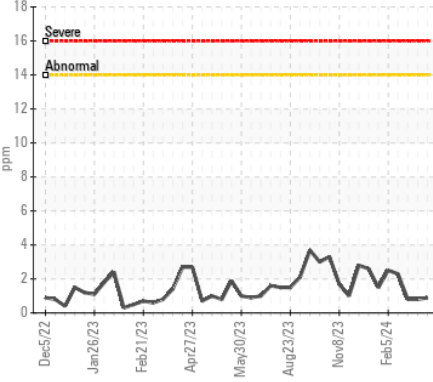
▲ Iron (ppm)



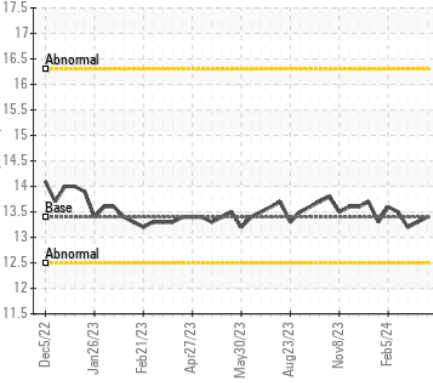
Aluminum (ppm)



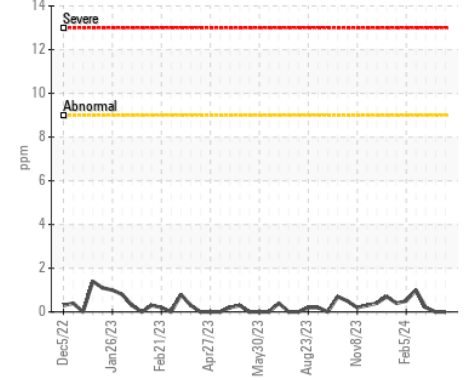
Copper (ppm)



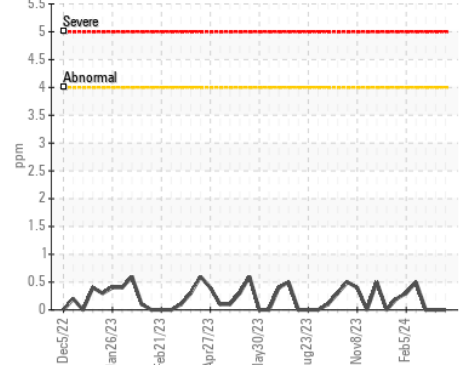
Viscosity @ 100°C



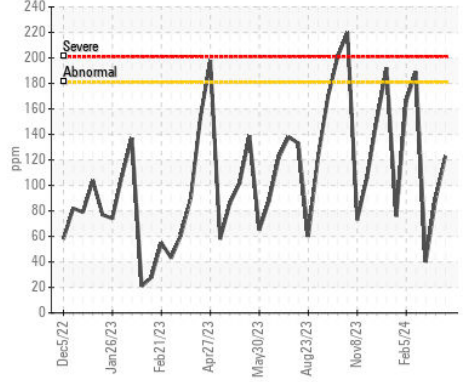
Lead (ppm)



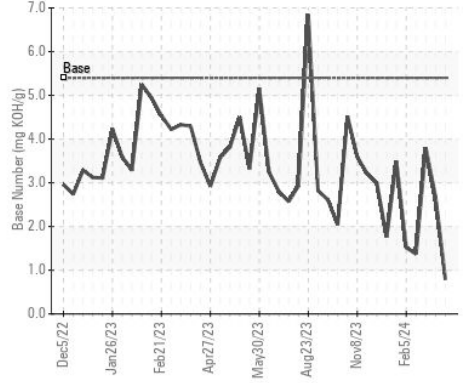
Chromium (ppm)



Silicon (ppm)



▲ Base Number



Certificate L2367

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

Sample No. : WC0895526

Lab Number : 06123877

Unique Number : 10938028

Test Package : MOB 2

Received : 20 Mar 2024

Tested : 21 Mar 2024

Diagnosed : 22 Mar 2024 - Don Baldrige

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)