



OIL ANALYSIS REPORT

WEAR	SEVERE
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL



Machine Id
Coopersville CAT 3 CPVM03BE
Component
Biogas Engine
Fluid
CHEVRON HDAX 9500 GAS ENGINE OIL 40 (105 GAL)

RECOMMENDATION

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		WC0871565	WC0871559	WC0871558
Sample Date		Client Info		16 Apr 2024	08 Apr 2024	03 Apr 2024
Machine Age	hrs	Client Info		23816	23626	23506
Oil Age	hrs	Client Info		616	426	306
Filter Age	hrs	Client Info		616	426	306
Oil Changed		Client Info		Not Chngd	Not Chngd	Not Chngd
Filter Changed		Client Info		Not Chngd	Not Chngd	Not Chngd
Sample Status				SEVERE	SEVERE	ABNORMAL

WEAR

The tin level is severe.

Iron	ppm	ASTM D5185m	>15	<1	1	2
Chromium	ppm	ASTM D5185m	>4	0	<1	<1
Nickel	ppm	ASTM D5185m		0	<1	<1
Titanium	ppm	ASTM D5185m		0	<1	<1
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>6	2	2	2
Lead	ppm	ASTM D5185m	>9	1	2	3
Copper	ppm	ASTM D5185m	>6	1	1	1
Tin	ppm	ASTM D5185m	>4	▲ 6	▲ 7	▲ 5
Vanadium	ppm	ASTM D5185m		0	<1	<1
White Metal	scalar	*Visual	NONE	NONE	NONE	LIGHT
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

There is no indication of any contamination in the oil.

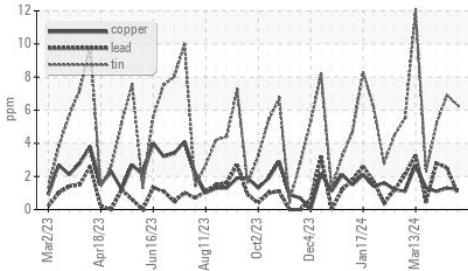
Silicon	ppm	ASTM D5185m	>181	173	146	103
Potassium	ppm	ASTM D5185m	>20	3	3	3
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Water		WC Method	>.11	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844		0.1	0	0
Nitration	Abs/cm	*ASTM D7624		7.4	7.0	6.5
Sulfation	Abs/.1mm	*ASTM D7415		19.6	18.3	17.1
Silt	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	>.11	NEG	NEG	NEG

FLUID CONDITION

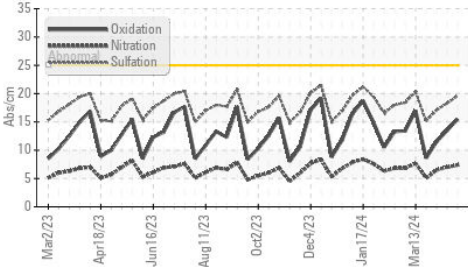
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid.

Sodium	ppm	ASTM D5185m	>21	1	1	<1
Boron	ppm	ASTM D5185m		0	2	5
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		4	5	4
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		8	7	31
Calcium	ppm	ASTM D5185m		2040	1904	1855
Phosphorus	ppm	ASTM D5185m		293	296	299
Zinc	ppm	ASTM D5185m		353	356	362
Sulfur	ppm	ASTM D5185m		2383	2151	2152
Oxidation	Abs/.1mm	*ASTM D7414		15.5	13.5	11.5
Acid Number (AN)	mg KOH/g	ASTM D8045	1.0	1.62	1.50	1.08
Base Number (BN)	mg KOH/g	ASTM D2896	5.4	3.72	3.98	4.20
Visc @ 100°C	cSt	ASTM D445	13.4	13.9	13.7	13.6

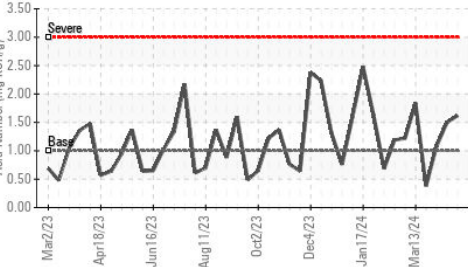
▲ Non-ferrous Metals



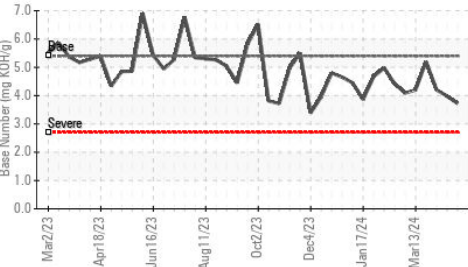
FT-IR (Direct Trend)



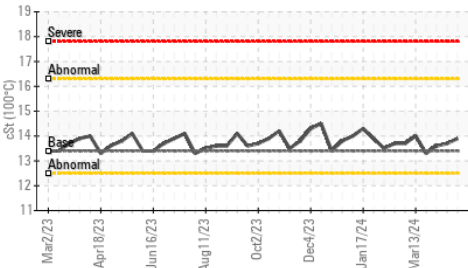
Acid Number



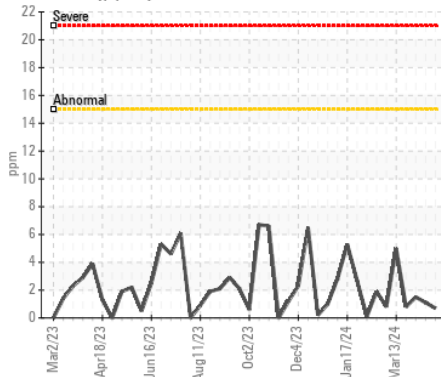
Base Number



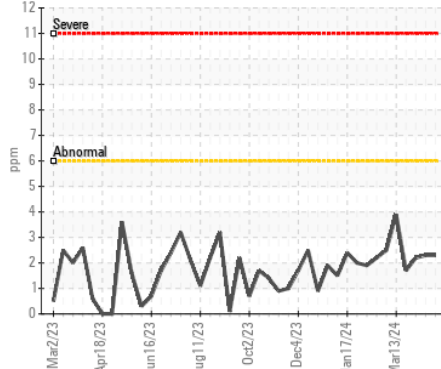
Viscosity @ 100°C



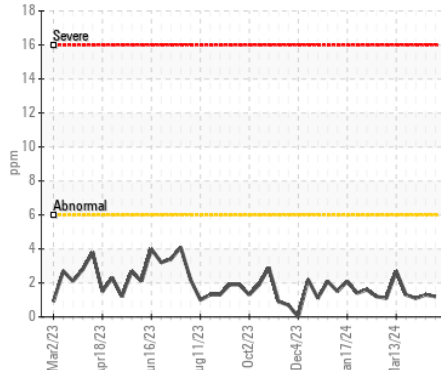
Iron (ppm)



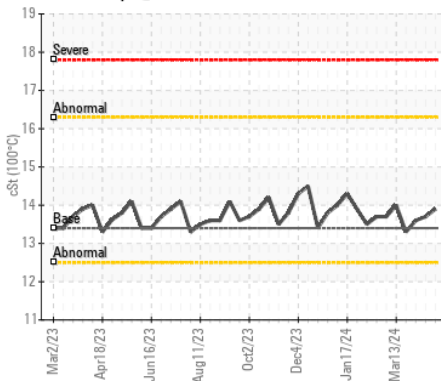
Aluminum (ppm)



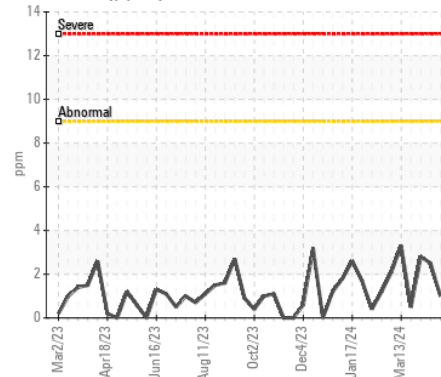
Copper (ppm)



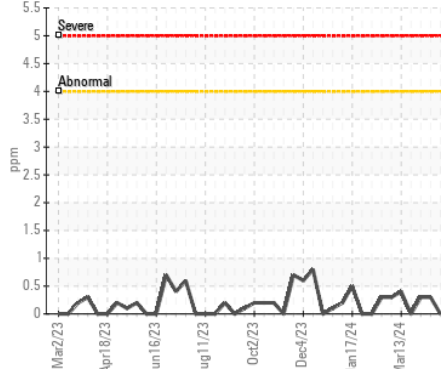
Viscosity @ 100°C



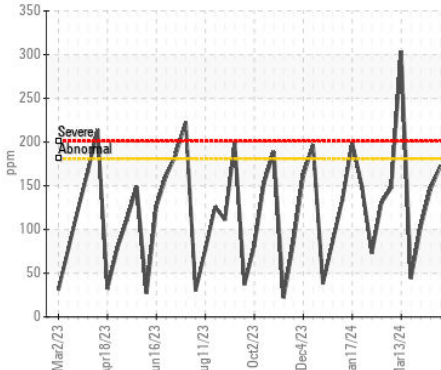
Lead (ppm)



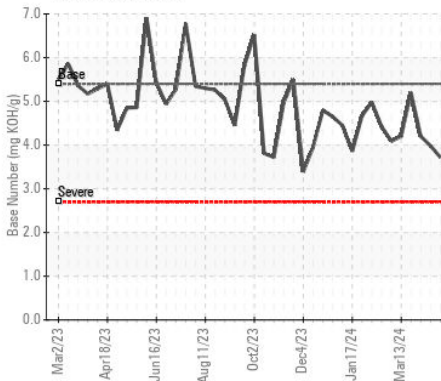
Chromium (ppm)



Silicon (ppm)



Base Number



Certificate L2367

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

Sample No. : WC0871565

Lab Number : 06153280

Unique Number : 10983358

Test Package : MOB 2

Received : 18 Apr 2024

Tested : 19 Apr 2024

Diagnosed : 22 Apr 2024 - Sean Felton

EDL NA Recips-Coopersville

Coopersville Powerstation, 15362 68th Avenue

Coopersville, MI

US 49404

Contact: Daniel Young

daniel.young@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)