



OIL ANALYSIS REPORT

WEAR	ABNORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL



Machine Id
Coopersville CAT 6 CPVM06BE
Component
Biogas Engine
Fluid
CHEVRON HDAX 9500 GAS ENGINE OIL 40 (105 GAL)

RECOMMENDATION

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

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0871573	WC0871561	WC0871504
Sample Date		Client Info		18 Apr 2024	09 Apr 2024	20 Mar 2024
Machine Age	hrs	Client Info		32202	31990	31510
Oil Age	hrs	Client Info		212	1	810
Filter Age	hrs	Client Info		212	1	810
Oil Changed		Client Info		Not Changed	Changed	Not Changed
Filter Changed		Client Info		Not Changed	Changed	Not Changed
Sample Status				ABNORMAL	NORMAL	SEVERE

WEAR

The copper level is abnormal. All other component wear rates are normal.

Iron	ppm	ASTM D5185m	>15	1	1	2
Chromium	ppm	ASTM D5185m	>4	<1	<1	0
Nickel	ppm	ASTM D5185m		0	<1	0
Titanium	ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>6	<1	2	3
Lead	ppm	ASTM D5185m	>9	0	2	2
Copper	ppm	ASTM D5185m	>6	▲ 8	2	7
Tin	ppm	ASTM D5185m	>4	3	3	▲ 7
Vanadium	ppm	ASTM D5185m		0	<1	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.

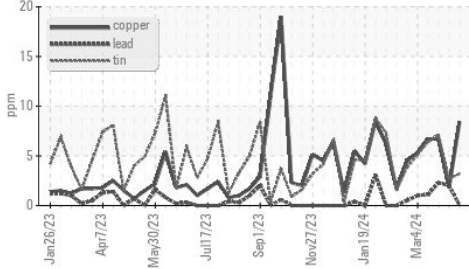
Silicon	ppm	ASTM D5185m	>181	97	31	▲ 201
Potassium	ppm	ASTM D5185m	>20	0	3	4
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Water		WC Method	>.11	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844		0	0	0
Nitration	Abs/cm	*ASTM D7624		5.9	5.0	7.6
Sulfation	Abs/.1mm	*ASTM D7415		16.5	15.2	19.9
Silt	scalar	*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	>.11	NEG	NEG	NEG

FLUID CONDITION

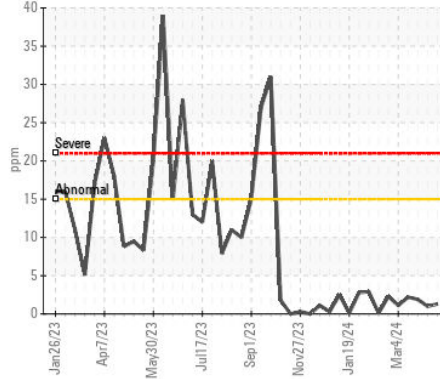
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is acceptable for the time in service.

Sodium	ppm	ASTM D5185m	>21	2	<1	2
Boron	ppm	ASTM D5185m		2	2	3
Barium	ppm	ASTM D5185m		1	0	0
Molybdenum	ppm	ASTM D5185m		2	3	4
Manganese	ppm	ASTM D5185m		1	<1	<1
Magnesium	ppm	ASTM D5185m		8	6	10
Calcium	ppm	ASTM D5185m		1790	1766	1911
Phosphorus	ppm	ASTM D5185m		268	269	310
Zinc	ppm	ASTM D5185m		323	324	364
Sulfur	ppm	ASTM D5185m		2167	2040	2351
Oxidation	Abs/.1mm	*ASTM D7414		10.0	8.4	16.8
Acid Number (AN)	mg KOH/g	ASTM D8045	1.0	0.45	0.603	1.62
Base Number (BN)	mg KOH/g	ASTM D2896	5.4	4.32	5.00	4.89
Visc @ 100°C	cSt	ASTM D445	13.4	13.4	13.4	14.0

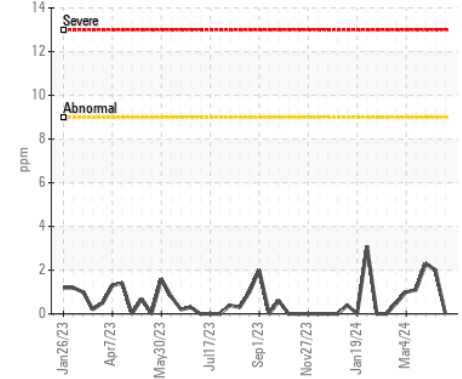
▲ Non-ferrous Metals



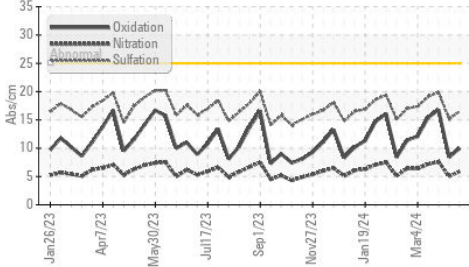
Iron (ppm)



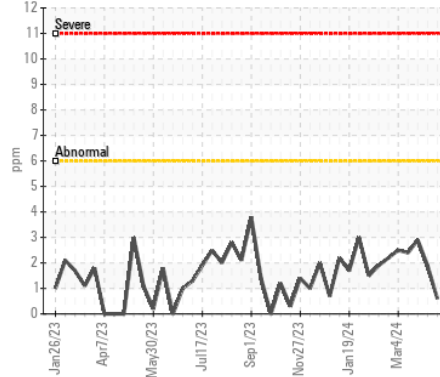
Lead (ppm)



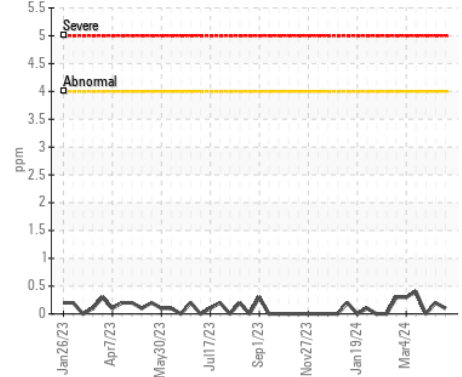
FT-IR (Direct Trend)



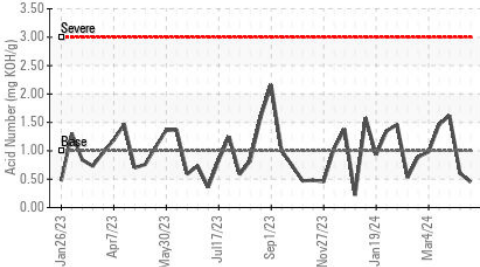
Aluminum (ppm)



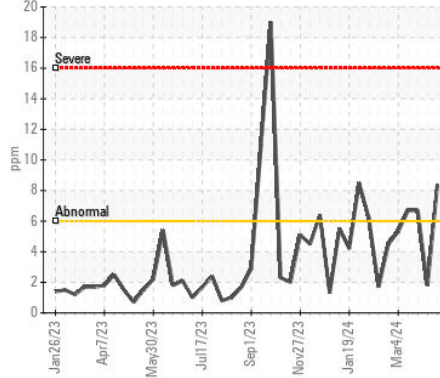
Chromium (ppm)



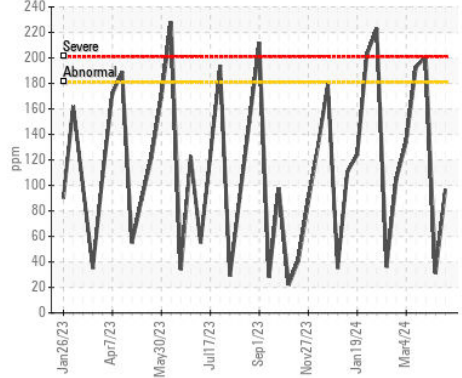
Acid Number



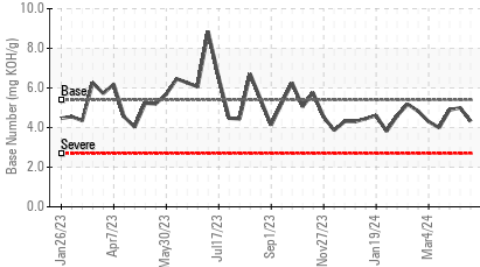
▲ Copper (ppm)



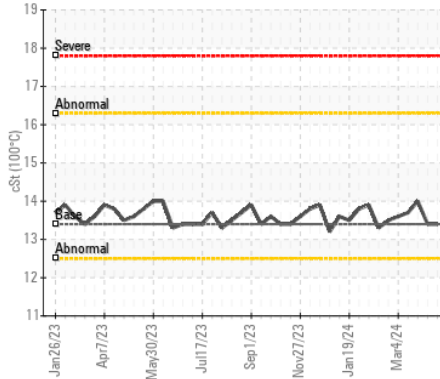
Silicon (ppm)



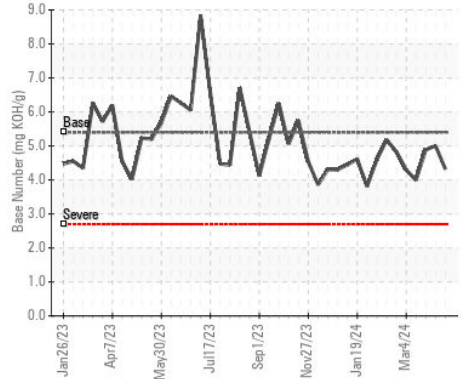
Base Number



Viscosity @ 100°C



Base Number



Certificate L2367

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

Sample No. : WC0871573

Lab Number : 06156196

Unique Number : 10991619

Test Package : MOB 2

Received : 22 Apr 2024

Tested : 23 Apr 2024

Diagnosed : 24 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)