



OIL ANALYSIS REPORT

WEAR	ABNORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL



Machine Id
Coopersville CAT 4 CPVM04BE
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		WC0871427	WC0871568	WC0871564
Sample Date		Client Info		09 Jul 2024	26 Apr 2024	15 Apr 2024
Machine Age	hrs	Client Info		81990	80272	80013
Oil Age	hrs	Client Info		285	692	433
Filter Age	hrs	Client Info		285	692	433
Oil Changed		Client Info		Not Chngd	Not Chngd	Not Chngd
Filter Changed		Client Info		Not Chngd	Not Chngd	Not Chngd
Sample Status				ABNORMAL	ABNORMAL	NORMAL

WEAR

The tin level is abnormal.

PQ		ASTM D8184	>21	16	---	---
Iron	ppm	ASTM D5185m	>15	3	2	<1
Chromium	ppm	ASTM D5185m	>4	<1	0	0
Nickel	ppm	ASTM D5185m		0	0	0
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m		<1	0	0
Aluminum	ppm	ASTM D5185m	>6	2	2	2
Lead	ppm	ASTM D5185m	>9	<1	2	1
Copper	ppm	ASTM D5185m	>6	3	1	<1
Tin	ppm	ASTM D5185m	>4	▲ 4	▲ 4	3
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.

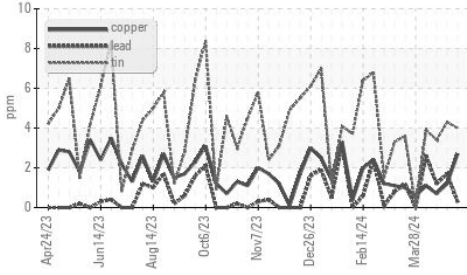
Silicon	ppm	ASTM D5185m	>181	109	143	103
Potassium	ppm	ASTM D5185m	>20	2	2	4
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Water		WC Method	>.11	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844		0	0.1	0.1
Nitration	Abs/cm	*ASTM D7624		4.7	7.8	7.4
Sulfation	Abs/.1mm	*ASTM D7415		18.4	21.2	20.1
Silt	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

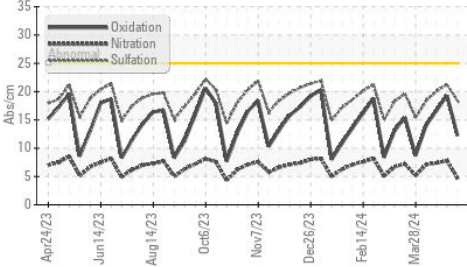
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m	>21	0	2	2
Boron	ppm	ASTM D5185m		105	3	0
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		8	3	2
Manganese	ppm	ASTM D5185m		0	<1	<1
Magnesium	ppm	ASTM D5185m		43	6	7
Calcium	ppm	ASTM D5185m		1657	1988	2047
Phosphorus	ppm	ASTM D5185m		463	289	290
Zinc	ppm	ASTM D5185m		619	368	356
Sulfur	ppm	ASTM D5185m		3307	2463	2541
Oxidation	Abs/.1mm	*ASTM D7414		12.2	19.3	16.7
Acid Number (AN)	mg KOH/g	ASTM D8045	1.0	0.75	2.10	1.58
Base Number (BN)	mg KOH/g	ASTM D2896	5.4	4.92	3.96	3.38
Visc @ 100°C	cSt	ASTM D445	13.4	14.2	14.1	13.9

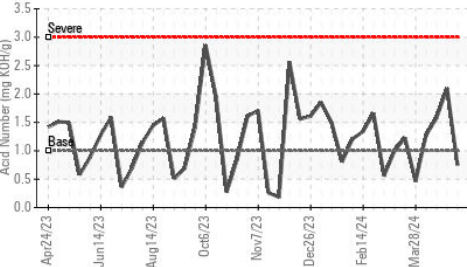
▲ Non-ferrous Metals



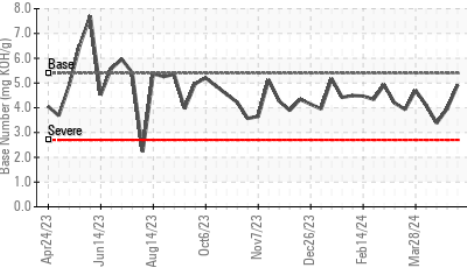
FT-IR (Direct Trend)



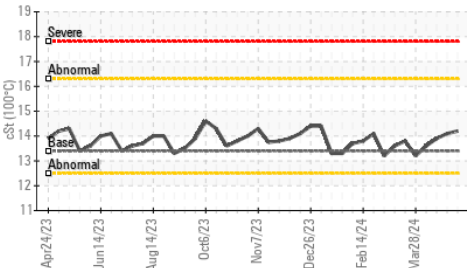
Acid Number



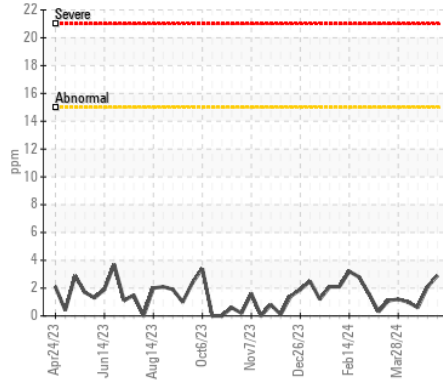
Base Number



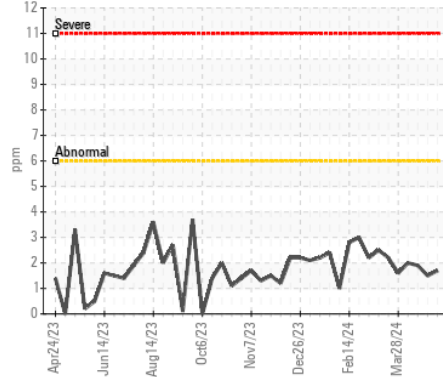
Viscosity @ 100°C



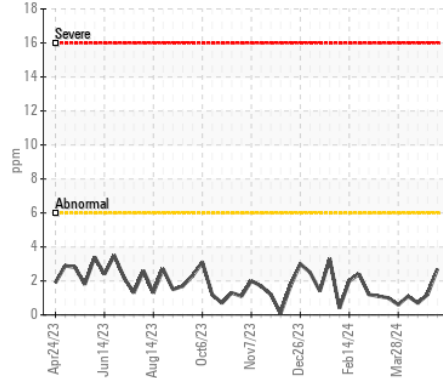
Iron (ppm)



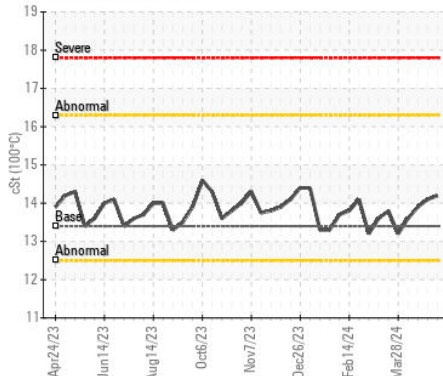
Aluminum (ppm)



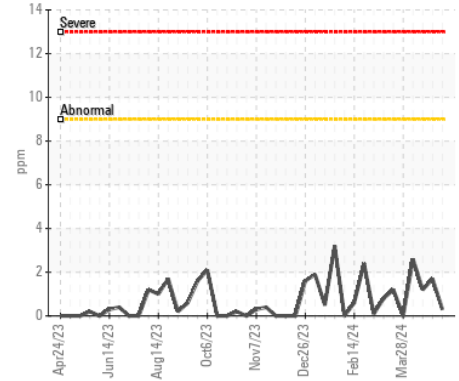
Copper (ppm)



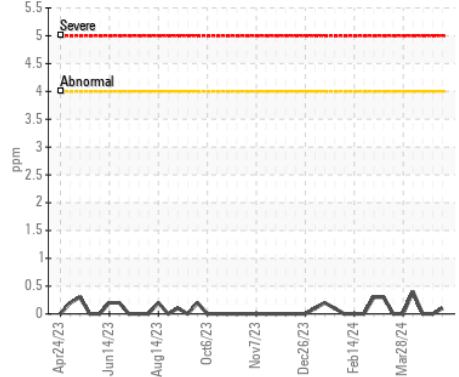
Viscosity @ 100°C



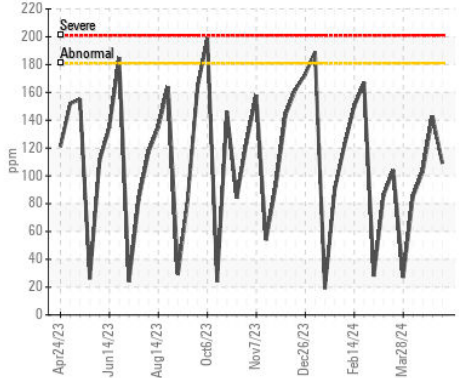
Lead (ppm)



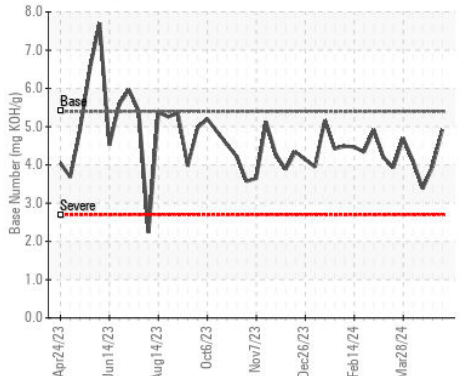
Chromium (ppm)



Silicon (ppm)



Base Number



Certificate L2367

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

Sample No. : WC0871427

Lab Number : 06233415

Unique Number : 11116908

Test Package : MOB 2 (Additional Tests: PQ)

Received : 11 Jul 2024

Tested : 12 Jul 2024

Diagnosed : 12 Jul 2024 - Don Baldridge

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)