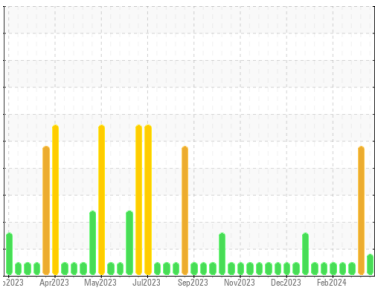
OIL ANALYSIS REPORT

Sample Rating Trend



WEAR

Machine Id
Coopersville CAT 5 CPVM05BE
Component
Biogas Engine
Fluid
CHEVRON HDAX 9500 GAS ENGINE OIL 40 (105 GAL)

DIAGNOSIS

Recommendation
No corrective action is recommended at this time. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

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

Contamination
There is no indication of any contamination in the oil.

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.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0871590**	WC0871534	WC0871529
Sample Date		Client Info		**29 Mar 2024**	26 Feb 2024	20 Feb 2024
Machine Age	hrs	Client Info		**16119**	15380	15240
Oil Age	hrs	Client Info		**362**	837	697
Oil Changed		Client Info		**Changed**	Not Changd	Not Changd
Sample Status				**ABNORMAL**	SEVERE	NORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>4.0	**<1.0**	<1.0	<1.0
Water		WC Method	>.11	**NEG**	NEG	NEG
Glycol		WC Method		**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>15	**<1**	3	1
Chromium	ppm	ASTM D5185m	>4	**0**	<1	0
Nickel	ppm	ASTM D5185m		**0**	<1	0
Titanium	ppm	ASTM D5185m		**<1**	<1	0
Silver	ppm	ASTM D5185m		**0**	0	0
Aluminum	ppm	ASTM D5185m	>6	**2**	3	3
Lead	ppm	ASTM D5185m	>9	**3**	5	6
Copper	ppm	ASTM D5185m	>6	**1**	2	1
Tin	ppm	ASTM D5185m	>4	▲ **4**	8	7
Vanadium	ppm	ASTM D5185m		**<1**	0	0
Cadmium	ppm	ASTM D5185m		**0**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**2**	1	2
Barium	ppm	ASTM D5185m		**0**	0	0
Molybdenum	ppm	ASTM D5185m		**4**	2	2
Manganese	ppm	ASTM D5185m		**0**	0	<1
Magnesium	ppm	ASTM D5185m		**6**	8	10
Calcium	ppm	ASTM D5185m		**1770**	1864	1909
Phosphorus	ppm	ASTM D5185m		**248**	274	280
Zinc	ppm	ASTM D5185m		**318**	362	358
Sulfur	ppm	ASTM D5185m		**2122**	1910	1822

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>181	**127**	▲ 210	179
Sodium	ppm	ASTM D5185m	>21	**1**	0	<1
Potassium	ppm	ASTM D5185m	>20	**0**	2	1

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844		**0**	0.1	0.1
Nitration	Abs/cm	*ASTM D7624		**6.7**	7.7	7.5
Sulfation	Abs/.1mm	*ASTM D7415		**17.9**	20.3	19.7

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414		**12.7**	17.6	16.2
Acid Number (AN)	mg KOH/g	ASTM D8045	1.0	**1.13**	2.09	1.56
Base Number (BN)	mg KOH/g	ASTM D2896	5.4	**3.98**	4.04	3.99

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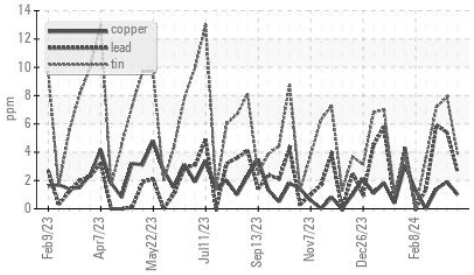
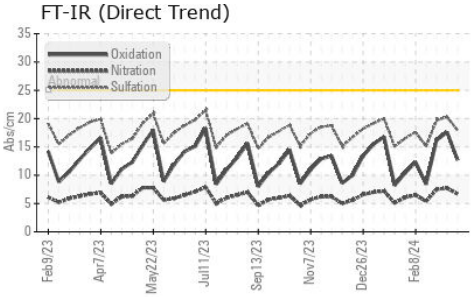
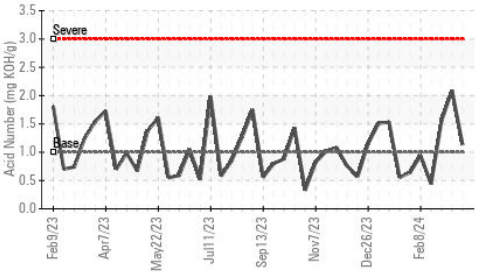
Non-ferrous Metals



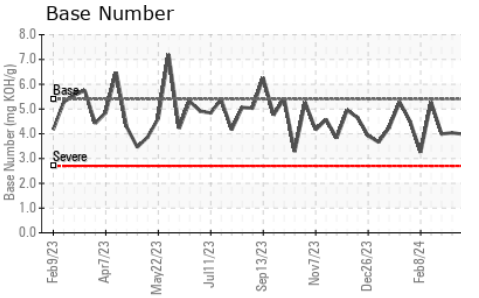
FT-IR (Direct Trend)



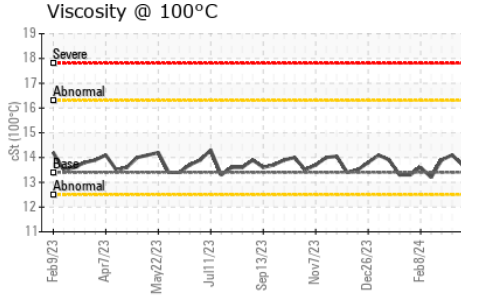
Acid Number



Base Number



Viscosity @ 100°C

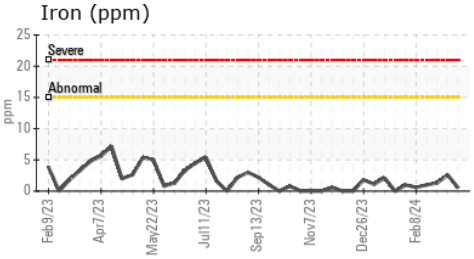


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt	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
Free Water	scalar	*Visual		**NEG**	NEG	NEG

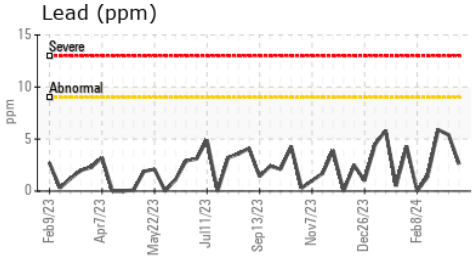
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	13.4	**13.7**	14.1	13.9

GRAPHS

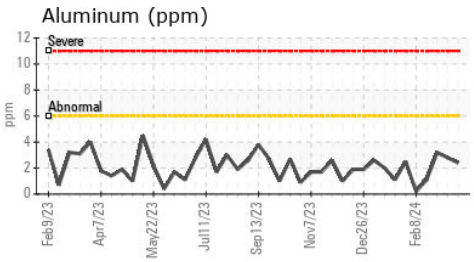
Iron (ppm)



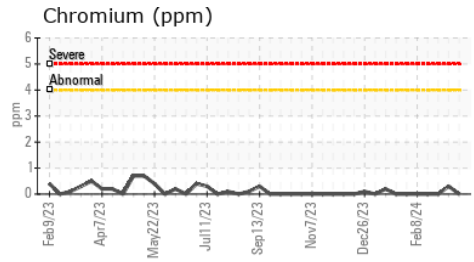
Lead (ppm)



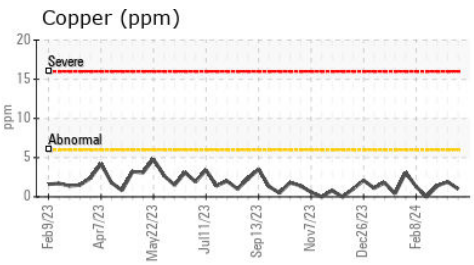
Aluminum (ppm)



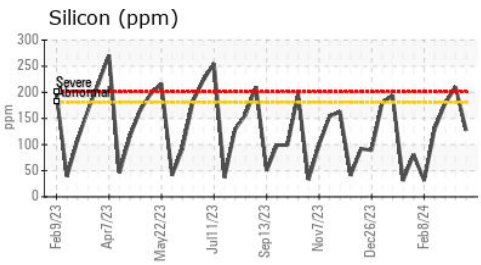
Chromium (ppm)



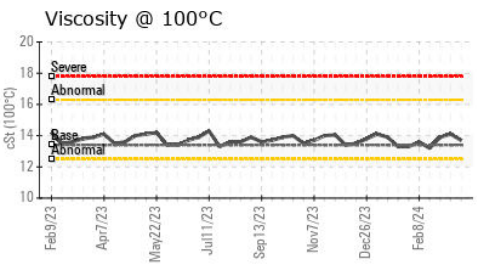
Copper (ppm)



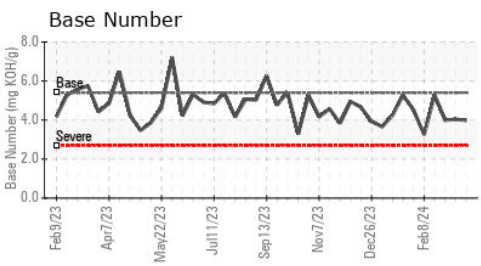
Silicon (ppm)



Viscosity @ 100°C



Base Number



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0871590
Lab Number : 06138720
Unique Number : 10963528
Test Package : MOB 2

Received : 04 Apr 2024
Tested : 05 Apr 2024
Diagnosed : 06 Apr 2024 - Don Baldridge

Certificate L2367

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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Report Id: EDLCOO [WUSCAR] 06138720 (Generated: 04/09/2024 16:41:26) Rev: 2

Submitted By: Chad Conroy