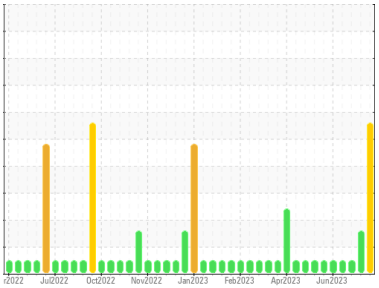
OIL ANALYSIS REPORT

Sample Rating Trend



DIRT

Machine Id
Coopersville CAT 3 CPVM03BE
Component
Biogas Engine
Fluid
CHEVRON HDAX 6500 LFG GAS ENGINE OIL (--- GAL)

DIAGNOSIS

Recommendation

We recommend that you drain the oil and perform a filter service on this component if not already done. We recommend an early resample to monitor this condition.

Wear

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

Contamination

Elemental level of silicon (Si) above normal.

Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The oil is no longer serviceable due to the presence of contaminants.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0819397**	WC0819402	WC0819406
Sample Date		Client Info		**17 Jul 2023**	06 Jul 2023	26 Jun 2023
Machine Age	hrs	Client Info		**17394**	17134	16896
Oil Age	hrs	Client Info		**910**	650	412
Oil Changed		Client Info		**Not Changd**	Not Changd	Not Changd
Sample Status				**SEVERE**	ABNORMAL	NORMAL

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

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>15	**6**	5	5
Chromium	ppm	ASTM D5185m	>4	**<1**	<1	<1
Nickel	ppm	ASTM D5185m	>2	**0**	<1	<1
Titanium	ppm	ASTM D5185m		**0**	<1	0
Silver	ppm	ASTM D5185m	>5	**0**	0	0
Aluminum	ppm	ASTM D5185m	>6	**3**	2	2
Lead	ppm	ASTM D5185m	>9	**1**	<1	1
Copper	ppm	ASTM D5185m	>14	**4**	3	3
Tin	ppm	ASTM D5185m	>4	▲ **10**	8	8
Vanadium	ppm	ASTM D5185m		**0**	0	0
Cadmium	ppm	ASTM D5185m		**0**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**3**	3	5
Barium	ppm	ASTM D5185m		**0**	0	0
Molybdenum	ppm	ASTM D5185m		**3**	2	2
Manganese	ppm	ASTM D5185m		**<1**	<1	<1
Magnesium	ppm	ASTM D5185m		**30**	37	40
Calcium	ppm	ASTM D5185m		**2151**	1822	2026
Phosphorus	ppm	ASTM D5185m		**319**	288	310
Zinc	ppm	ASTM D5185m		**403**	356	385
Sulfur	ppm	ASTM D5185m		**2472**	2122	2391

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>181	● **223**	▲ 186	161
Sodium	ppm	ASTM D5185m		**<1**	1	<1
Potassium	ppm	ASTM D5185m	>20	**0**	0	0

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844		**0.1**	0.1	0.1
Nitration	Abs/cm	*ASTM D7624	>20	**7.6**	7.1	6.9
Sulfation	Abs/.1mm	*ASTM D7415	>30	**20.4**	20.0	18.7

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**17.7**	16.7	13.2
Acid Number (AN)	mg KOH/g	ASTM D8045	1.2	**2.177**	1.34	1.03
Base Number (BN)	mg KOH/g	ASTM D2896	4.5	**6.78**	5.28	4.94

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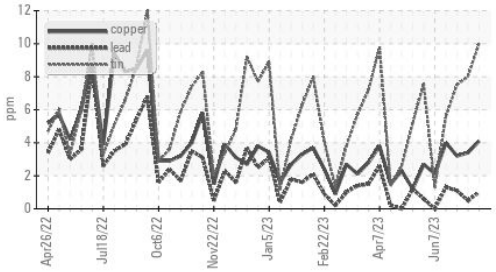
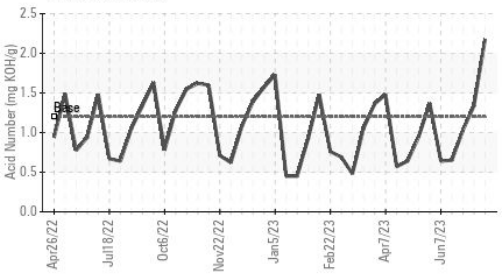
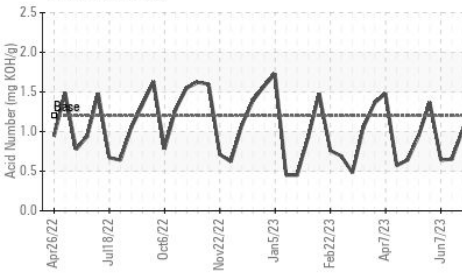
Non-ferrous Metals



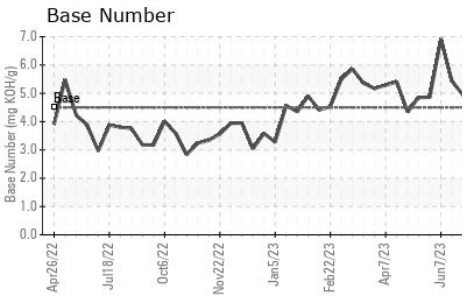
Acid Number



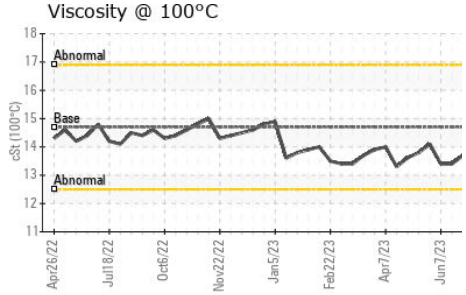
Acid Number



Base Number



Viscosity @ 100°C

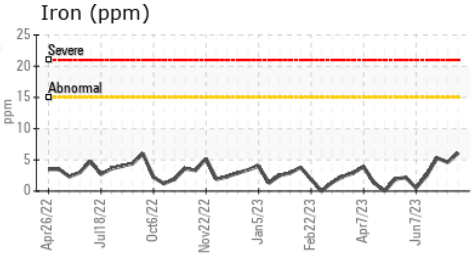


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Appearance	scalar	*Visual	NORML	**NORML**	NORML	NORML
Odor	scalar	*Visual	NORML	**NORML**	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	**NEG**	NEG	NEG
Free Water	scalar	*Visual		**NEG**	NEG	NEG

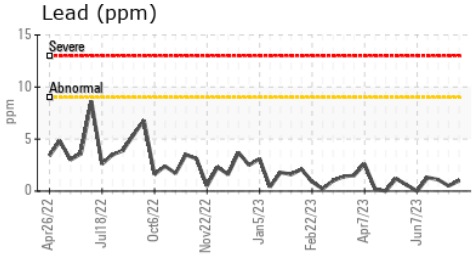
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14.7	**14.1**	13.9	13.7

GRAPHS

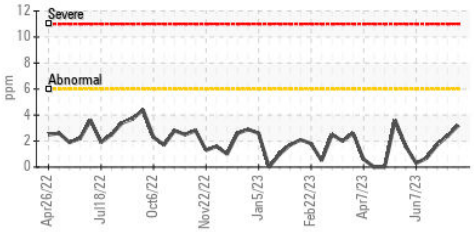
Iron (ppm)



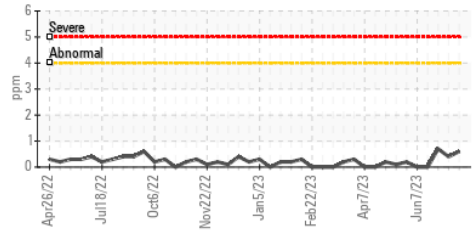
Lead (ppm)



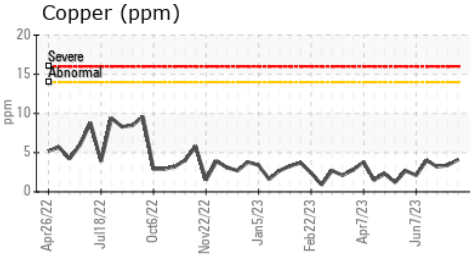
Aluminum (ppm)



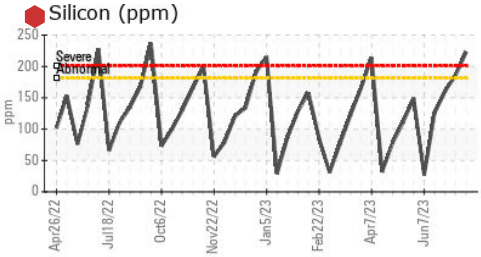
Chromium (ppm)



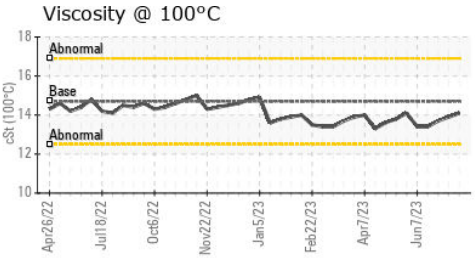
Copper (ppm)



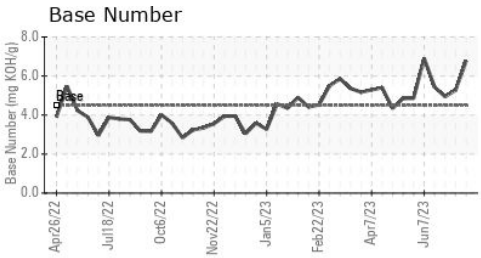
Silicon (ppm)



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0819397
Lab Number : 05903887
Unique Number : 10565243
Test Package : MOB 2

Received : 20 Jul 2023
Diagnosed : 25 Jul 2023
Diagnostician : Doug Bogart

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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US 49404
Contact: Daniel Young
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Report Id: EDLCOO [WUSCAR] 05903887 (Generated: 07/27/2023 20:01:44) Rev: 1

Submitted By: Chad Conroy