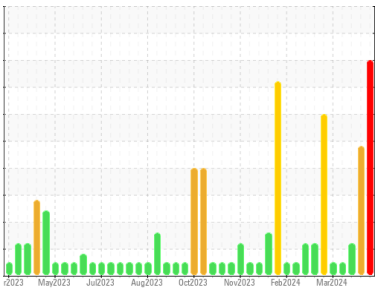
OIL ANALYSIS REPORT

Sample Rating Trend



DIRT

Machine Id
Grand Blanc CAT 4 GBLM04BE
Component
Biogas Engine
Fluid
CHEVRON HDAX 9500 GAS ENGINE OIL 40 (--- GAL)

DIAGNOSIS

▲ Recommendation
Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition. (Customer Sample Comment: 950hr End of Cycle Oil sample)

Wear
All component wear rates are normal.

▲ Contamination
Elemental level of silicon (Si) above normal.

▲ Fluid Condition
The BN level is low. The AN level is acceptable for this fluid.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0905701**	WC0905672	WC0905753
Sample Date		Client Info		**24 Apr 2024**	18 Apr 2024	10 Apr 2024
Machine Age	hrs	Client Info		**69243**	69082	68870
Oil Age	hrs	Client Info		**950**	795	0
Oil Changed		Client Info		**Changed**	Not Changd	N/A
Sample Status				**SEVERE**	SEVERE	ABNORMAL

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	**8**	6	6
Chromium	ppm	ASTM D5185m	>4	**<1**	<1	<1
Nickel	ppm	ASTM D5185m		**0**	0	1
Titanium	ppm	ASTM D5185m		**<1**	0	<1
Silver	ppm	ASTM D5185m		**0**	0	0
Aluminum	ppm	ASTM D5185m	>6	**3**	2	2
Lead	ppm	ASTM D5185m	>9	**3**	2	4
Copper	ppm	ASTM D5185m	>6	**2**	3	2
Tin	ppm	ASTM D5185m	>4	**2**	3	3
Vanadium	ppm	ASTM D5185m		**0**	0	<1
Cadmium	ppm	ASTM D5185m		**0**	0	<1

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**2**	4	3
Barium	ppm	ASTM D5185m		**0**	1	0
Molybdenum	ppm	ASTM D5185m		**3**	2	3
Manganese	ppm	ASTM D5185m		**<1**	1	1
Magnesium	ppm	ASTM D5185m		**12**	14	10
Calcium	ppm	ASTM D5185m		**1965**	1984	1786
Phosphorus	ppm	ASTM D5185m		**278**	286	288
Zinc	ppm	ASTM D5185m		**347**	360	335
Sulfur	ppm	ASTM D5185m		**3705**	3698	3317

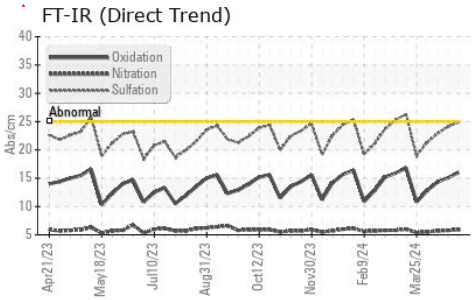
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>181	▲ **205**	▲ 187	153
Sodium	ppm	ASTM D5185m	>21	**2**	2	0
Potassium	ppm	ASTM D5185m	>20	**0**	0	3

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844		**0.1**	0.1	0.1
Nitration	Abs/cm	*ASTM D7624		**5.9**	5.8	5.7
Sulfation	Abs/.1mm	*ASTM D7415		**24.9**	24.1	22.9

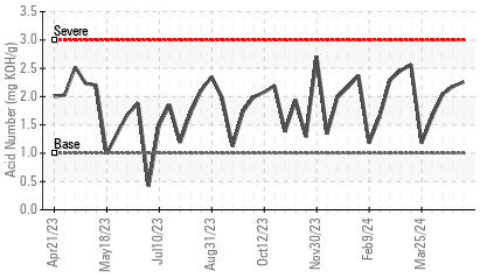
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414		**16.0**	15.1	14.3
Acid Number (AN)	mg KOH/g	ASTM D8045	1.0	**2.26**	2.18	▲ 2.04
Base Number (BN)	mg KOH/g	ASTM D2896	5.4	▲ **1.83**	▲ 1.97	2.22

OIL ANALYSIS REPORT

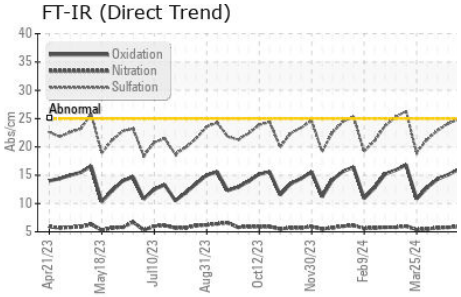
FT-IR (Direct Trend)



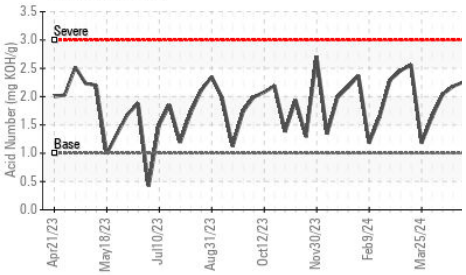
Acid Number



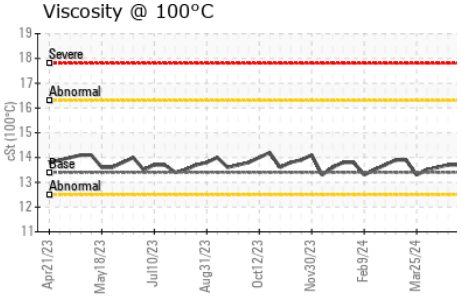
FT-IR (Direct Trend)



Acid Number



Viscosity @ 100°C

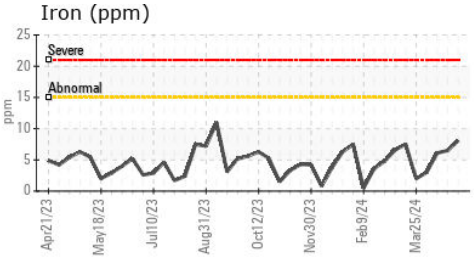


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	LIGHT	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt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

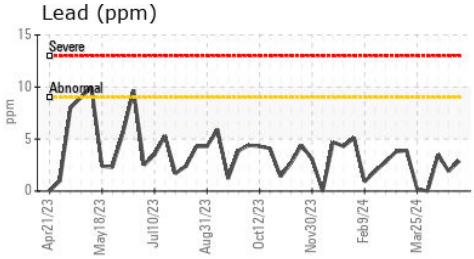
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	13.4	**13.7**	13.7	13.6

GRAPHS

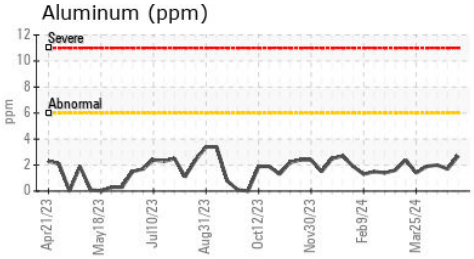
Iron (ppm)



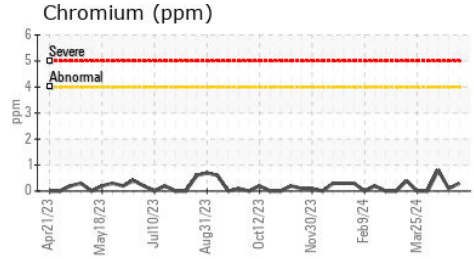
Lead (ppm)



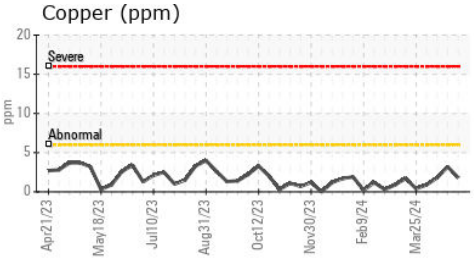
Aluminum (ppm)



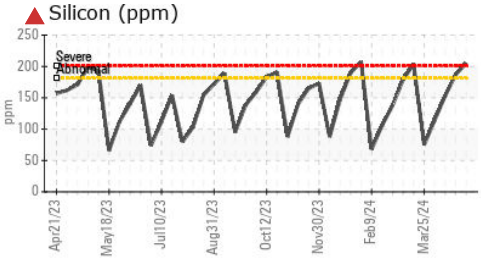
Chromium (ppm)



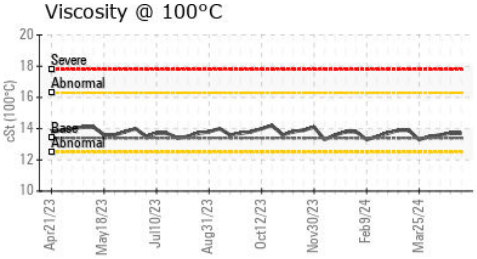
Copper (ppm)



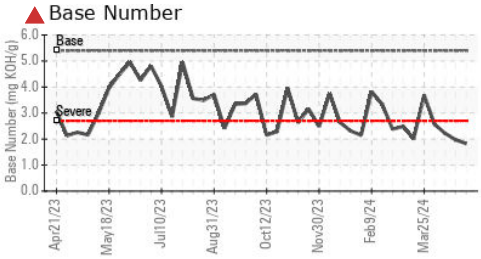
▲ Silicon (ppm)



Viscosity @ 100°C



▲ Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0905701
Lab Number : 06161680
Unique Number : 10997103
Test Package : MOB 2

Received : 26 Apr 2024
Tested : 29 Apr 2024
Diagnosed : 29 Apr 2024 - Sean Felton

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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