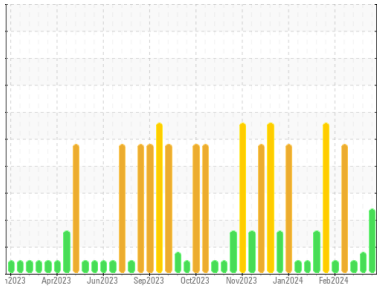
OIL ANALYSIS REPORT

Machine Id
BRCM01BE (S/N GZJ00658)
Component
Biogas Engine
Fluid
CHEVRON HDAX 9500 GAS ENGINE OIL 40 (--- GAL)

Sample Rating Trend



DIRT

DIAGNOSIS

Recommendation
The oil is near the end of it`s useful service life, recommend schedule an oil change. We recommend an early resample to monitor this condition.

Wear
The tin level is abnormal.

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.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0760865**	WC0760878	WC0760882
Sample Date		Client Info		**05 Apr 2024**	29 Mar 2024	21 Mar 2024
Machine Age	hrs	Client Info		**75840**	75691	75505
Oil Age	hrs	Client Info		**400**	161	65
Oil Changed		Client Info		**Not Changd**	Not Changd	Not Changd
Sample Status				**ABNORMAL**	ABNORMAL	NORMAL

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

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>14	**0**	0	<1
Chromium	ppm	ASTM D5185m	>3	**0**	0	0
Nickel	ppm	ASTM D5185m		**0**	0	0
Titanium	ppm	ASTM D5185m		**0**	0	0
Silver	ppm	ASTM D5185m		**0**	0	0
Aluminum	ppm	ASTM D5185m	>5	**2**	2	2
Lead	ppm	ASTM D5185m	>8	**<1**	<1	<1
Copper	ppm	ASTM D5185m	>5	**<1**	0	<1
Tin	ppm	ASTM D5185m	>3	▲ **4**	▲ 3	1
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		**6**	7	8
Barium	ppm	ASTM D5185m		**0**	0	0
Molybdenum	ppm	ASTM D5185m		**9**	7	8
Manganese	ppm	ASTM D5185m		**<1**	<1	<1
Magnesium	ppm	ASTM D5185m		**36**	29	35
Calcium	ppm	ASTM D5185m		**1848**	1804	1741
Phosphorus	ppm	ASTM D5185m		**315**	312	318
Zinc	ppm	ASTM D5185m		**383**	371	368
Sulfur	ppm	ASTM D5185m		**1825**	2245	1890

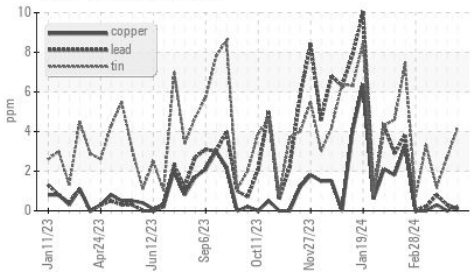
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>180	▲ **198**	141	43
Sodium	ppm	ASTM D5185m	>20	**2**	<1	2
Potassium	ppm	ASTM D5185m	>20	**0**	0	2

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844		**0**	0	0
Nitration	Abs/cm	*ASTM D7624		**6.2**	6.3	5.5
Sulfation	Abs/.1mm	*ASTM D7415		**19.3**	18.5	15.5

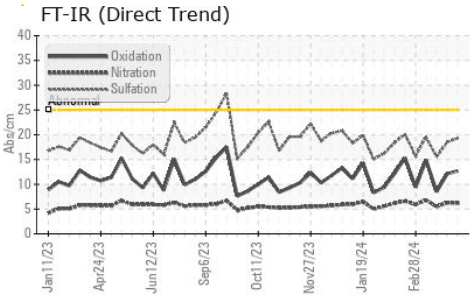
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414		**12.7**	12.1	8.5
Acid Number (AN)	mg KOH/g	ASTM D8045	1.0	**1.70**	1.38	0.67
Base Number (BN)	mg KOH/g	ASTM D2896	5.4	**3.77**	4.20	5.20

OIL ANALYSIS REPORT

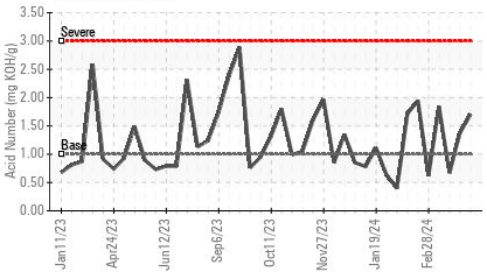
Non-ferrous Metals



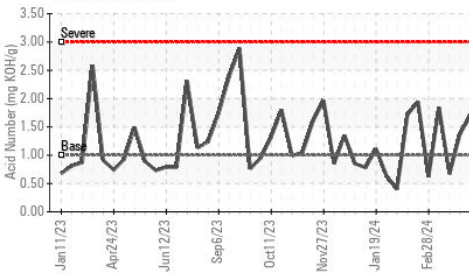
FT-IR (Direct Trend)



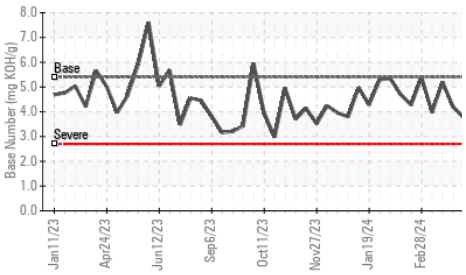
Acid Number



Acid Number



Base Number

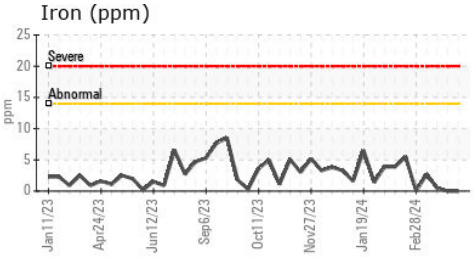


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt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

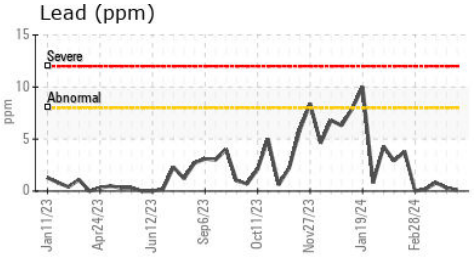
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	13.4	**13.1**	12.8	12.7

GRAPHS

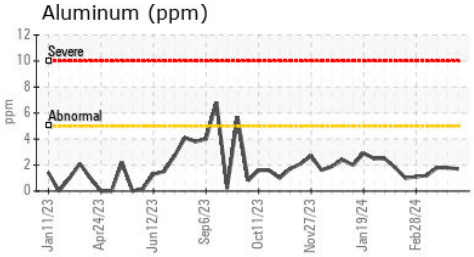
Iron (ppm)



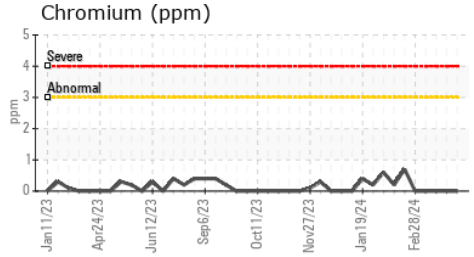
Lead (ppm)



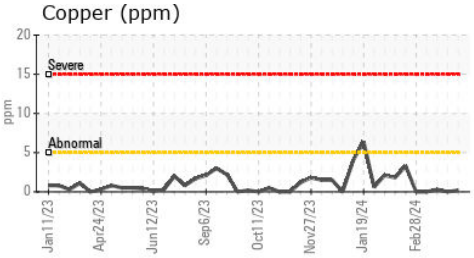
Aluminum (ppm)



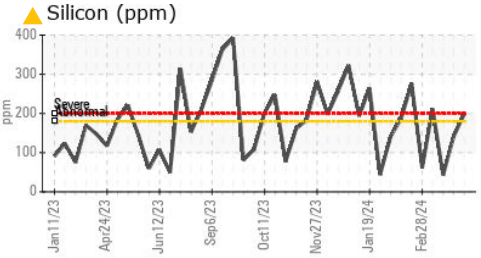
Chromium (ppm)



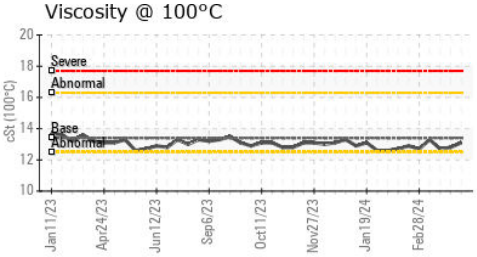
Copper (ppm)



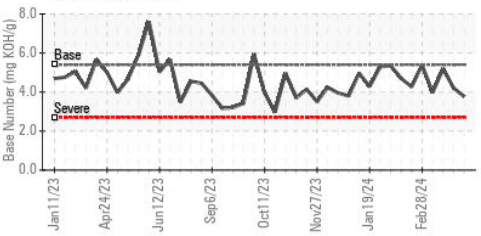
Silicon (ppm)



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0760865
Lab Number : 06143252
Unique Number : 10968060
Test Package : MOB 2

Received : 09 Apr 2024
Tested : 10 Apr 2024
Diagnosed : 10 Apr 2024 - Jonathan Hester

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: ENEGEO [WUSCAR] 06143252 (Generated: 04/10/2024 14:38:21) Rev: 1

Submitted By: BRETT PONTIUS