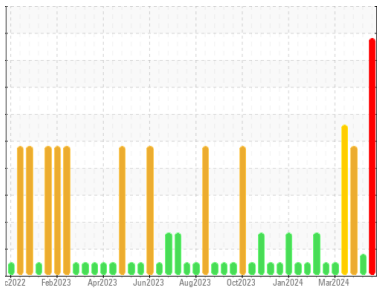
OIL ANALYSIS REPORT

Sample Rating Trend



DIRT

Machine Id
Brent Run CAT 4 BRRM04BE
Component
Biogas Engine
Fluid
CHEVRON HDAX 9500 GAS ENGINE OIL 40 (--- GAL)

DIAGNOSIS

Recommendation
We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition. (Customer Sample Comment: 400 hr sample after head change)

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 level is low. The AN level is acceptable for this fluid. The oil is no longer serviceable.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0915821**	WC0915825	WC0776719
Sample Date		Client Info		**17 Apr 2024**	10 Apr 2024	25 Mar 2024
Machine Age	hrs	Client Info		**107871**	107703	107350
Oil Age	hrs	Client Info		**471**	303	632
Oil Changed		Client Info		**Not Changd**	Not Changd	Not Changd
Sample Status				**SEVERE**	ABNORMAL	SEVERE

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	**4**	1	14
Chromium	ppm	ASTM D5185m	>3	**0**	<1	0
Nickel	ppm	ASTM D5185m		**0**	<1	<1
Titanium	ppm	ASTM D5185m		**0**	<1	0
Silver	ppm	ASTM D5185m		**0**	0	0
Aluminum	ppm	ASTM D5185m	>5	**2**	2	2
Lead	ppm	ASTM D5185m	>8	**<1**	2	1
Copper	ppm	ASTM D5185m	>5	**2**	2	4
Tin	ppm	ASTM D5185m	>3	▲ **4**	▲ 3	4
Vanadium	ppm	ASTM D5185m		**<1**	<1	0
Cadmium	ppm	ASTM D5185m		**0**	<1	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**0**	2	8
Barium	ppm	ASTM D5185m		**0**	0	0
Molybdenum	ppm	ASTM D5185m		**2**	3	4
Manganese	ppm	ASTM D5185m		**<1**	<1	0
Magnesium	ppm	ASTM D5185m		**7**	6	10
Calcium	ppm	ASTM D5185m		**1861**	1855	1861
Phosphorus	ppm	ASTM D5185m		**281**	309	297
Zinc	ppm	ASTM D5185m		**307**	356	366
Sulfur	ppm	ASTM D5185m		**3205**	3205	3302

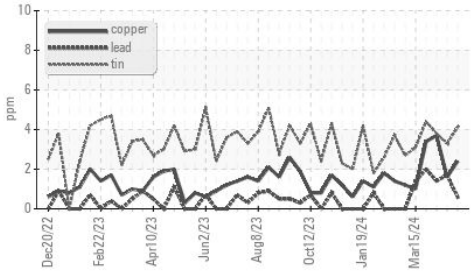
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>180	▲ **211**	140	▲ 217
Sodium	ppm	ASTM D5185m	>20	**3**	2	31
Potassium	ppm	ASTM D5185m	>20	**0**	3	3

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844		**0.1**	0.1	0.1
Nitration	Abs/cm	*ASTM D7624		**6.4**	6.1	6.7
Sulfation	Abs/.1mm	*ASTM D7415		**23.3**	20.8	24.9

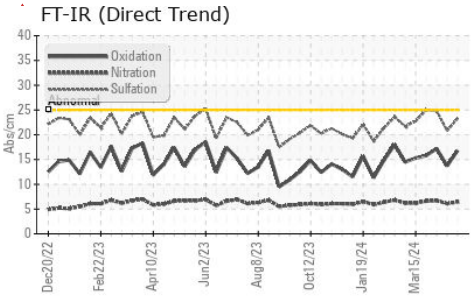
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414		**16.8**	13.7	17.2
Acid Number (AN)	mg KOH/g	ASTM D8045	1.0	**2.945**	1.40	1.92
Base Number (BN)	mg KOH/g	ASTM D2896	5.4	▲ **2.44**	3.17	2.98

OIL ANALYSIS REPORT

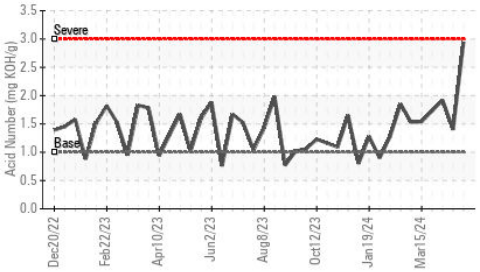
Non-ferrous Metals



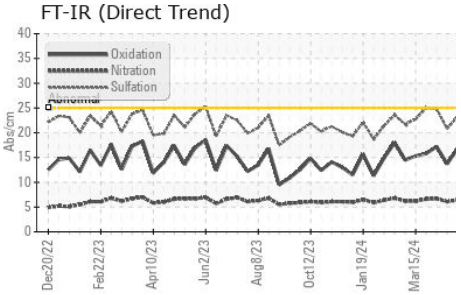
FT-IR (Direct Trend)



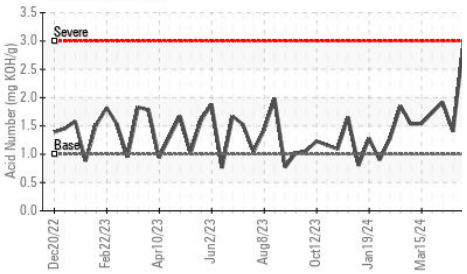
Acid Number



FT-IR (Direct Trend)



Acid Number

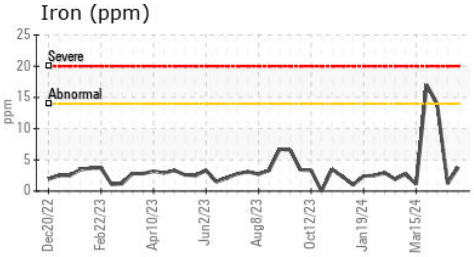


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt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

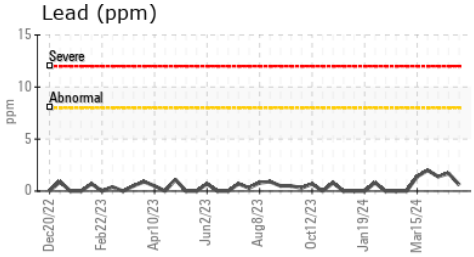
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	13.4	**13.7**	13.5	13.8

GRAPHS

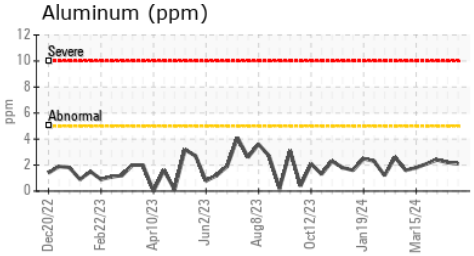
Iron (ppm)



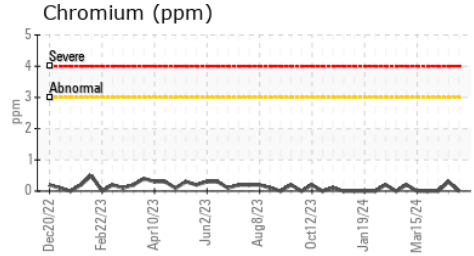
Lead (ppm)



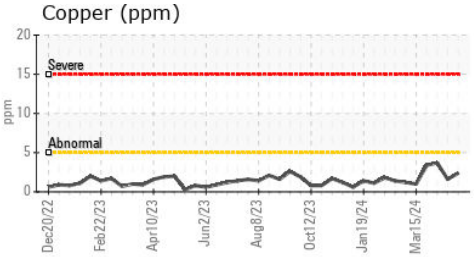
Aluminum (ppm)



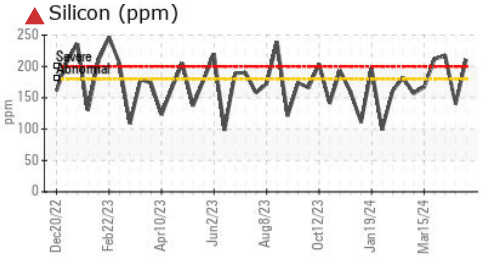
Chromium (ppm)



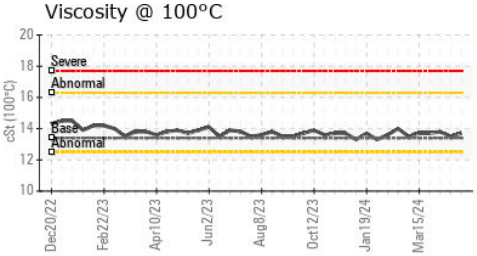
Copper (ppm)



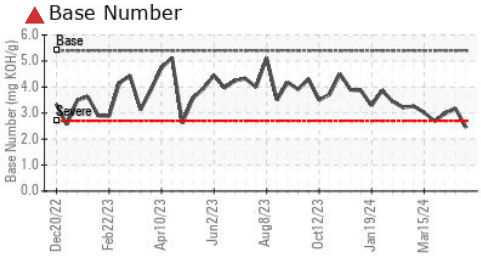
Silicon (ppm)



Viscosity @ 100°C



Base Number



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0915821
Lab Number : 06154639
Unique Number : 10990062
Test Package : MOB 2

Received : 19 Apr 2024
Tested : 25 Apr 2024
Diagnosed : 25 Apr 2024 - Jonathan Hester

Certificate L2367

EDL NA Recips-Brent Run
Brent Run Power Station, 8383 Vienna Road
Montrose, MI
US 48457-9141
Contact: Rob Stewart
Rob.Stewart@energydevelopments.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)

Report Id: EDLMON [WUSCAR] 06154639 (Generated: 04/25/2024 19:17:05) Rev: 1

Submitted By: DOUG HINE