



OIL ANALYSIS REPORT

WEAR	SEVERE
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL



Machine Id
WVTM03BE
Component
Biogas Engine
Fluid
MOBIL Pegasus™ 605 Ultra 40 (--- GAL)

RECOMMENDATION

We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0839334	WC0839327	WC0895544
Sample Date		Client Info		02 Jul 2024	06 May 2024	26 Apr 2024
Machine Age	hrs	Client Info		36639	35285	35074
Oil Age	hrs	Client Info		460	256	54
Filter Age	hrs	Client Info		460	256	54
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Filter Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				SEVERE	SEVERE	NORMAL

WEAR

The iron level is severe. The tin level is abnormal.

PQ	UOM	Method	Limit/Abn	Current	History1	History2
Iron	ppm	ASTM D5185m	>15	▲ 35	▲ 22	10
Chromium	ppm	ASTM D5185m	>4	1	<1	<1
Nickel	ppm	ASTM D5185m		1	0	<1
Titanium	ppm	ASTM D5185m		<1	0	<1
Silver	ppm	ASTM D5185m		<1	0	0
Aluminum	ppm	ASTM D5185m	>6	3	3	2
Lead	ppm	ASTM D5185m	>9	<1	0	<1
Copper	ppm	ASTM D5185m	>6	4	2	1
Tin	ppm	ASTM D5185m	>4	▲ 4	3	2
Vanadium	ppm	ASTM D5185m		<1	0	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

There is no indication of any contamination in the oil.

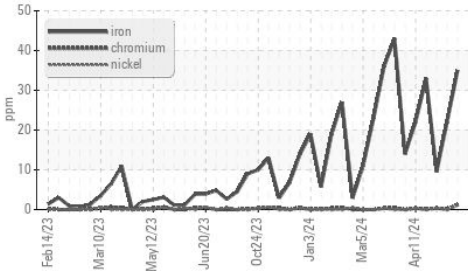
Silicon	ppm	ASTM D5185m	>181	167	117	47
Potassium	ppm	ASTM D5185m	>20	2	0	2
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Water		WC Method	>.11	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844		0	0	0
Nitration	Abs/cm	*ASTM D7624		3.7	3.8	3.5
Sulfation	Abs/.1mm	*ASTM D7415		23.9	21.5	18.0
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	LIGHT
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

FLUID CONDITION

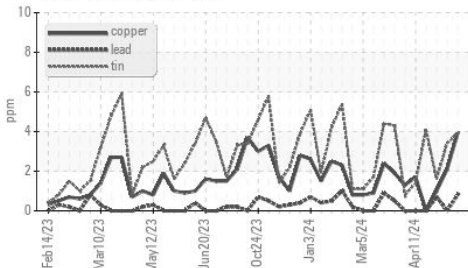
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid.

Sodium	ppm	ASTM D5185m	>21	0	<1	0
Boron	ppm	ASTM D5185m		24	51	119
Barium	ppm	ASTM D5185m		0	<1	0
Molybdenum	ppm	ASTM D5185m		9	5	5
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		57	33	31
Calcium	ppm	ASTM D5185m		1504	1519	1496
Phosphorus	ppm	ASTM D5185m		397	379	432
Zinc	ppm	ASTM D5185m		556	475	489
Sulfur	ppm	ASTM D5185m		5218	5742	4149
Oxidation	Abs/.1mm	*ASTM D7414		9.8	10.0	9.0
Acid Number (AN)	mg KOH/g	ASTM D8045		1.25	1.22	1.03
Base Number (BN)	mg KOH/g	ASTM D2896	5.7	2.82	3.30	4.53
Visc @ 100°C	cSt	ASTM D445	15	13.5	13.7	13.5

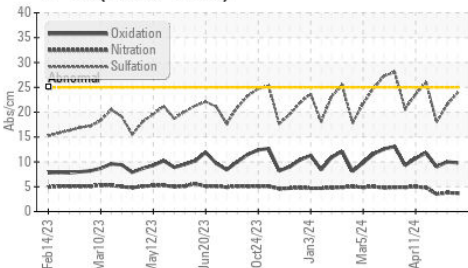
▲ Ferrous Alloys



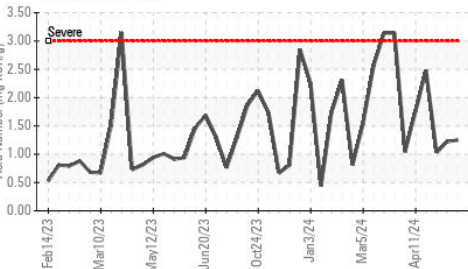
▲ Non-ferrous Metals



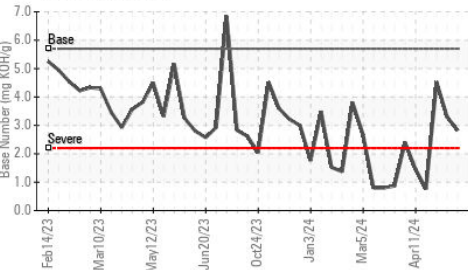
FT-IR (Direct Trend)



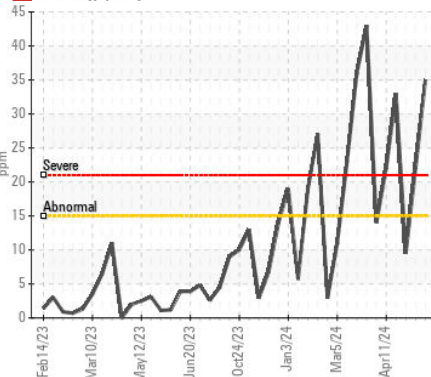
Acid Number



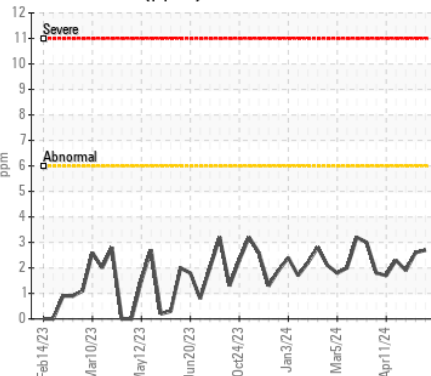
Base Number



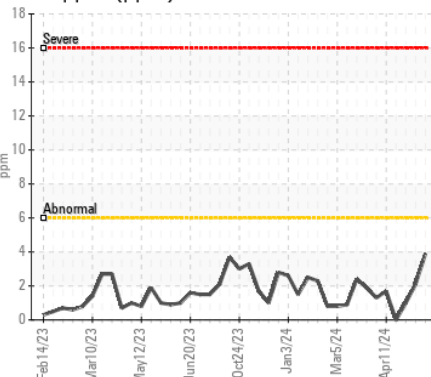
▲ Iron (ppm)



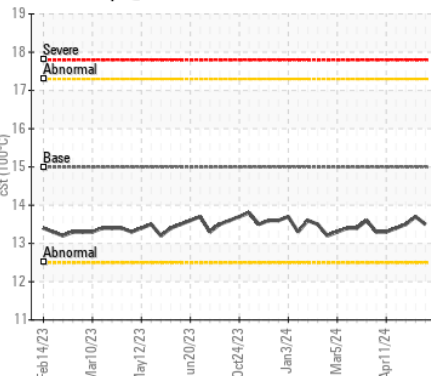
Aluminum (ppm)



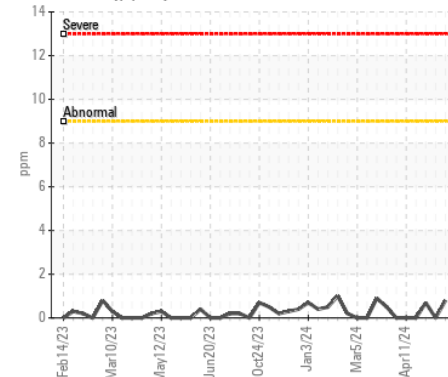
Copper (ppm)



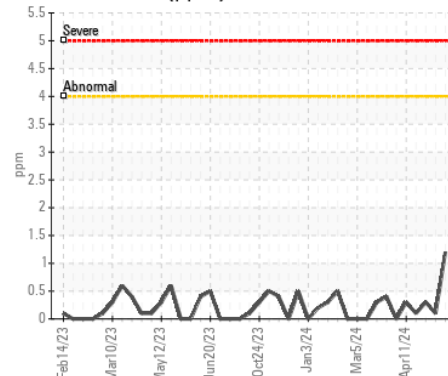
Viscosity @ 100°C



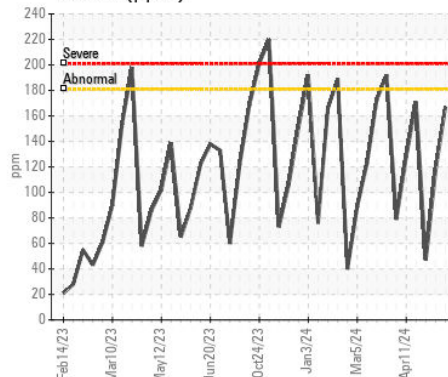
Lead (ppm)



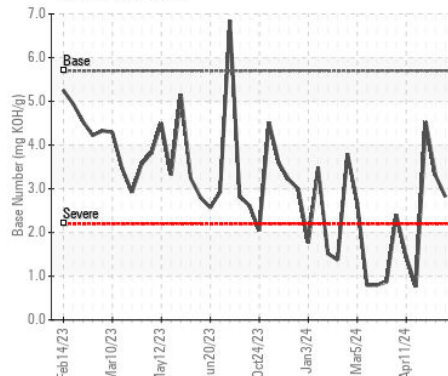
Chromium (ppm)



Silicon (ppm)



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : WC0839334

Lab Number : 06230360

Unique Number : 11113853

Test Package : MOB 2 (Additional Tests: PQ)

Received : 08 Jul 2024

Tested : 09 Jul 2024

Diagnosed : 10 Jul 2024 - Jonathan Hester

EDL NA Recips-Watervliet

Watervliet Powerstation, 3563 Hennessey Road

Watervliet, MI

US 49098

Contact: Scott Eastman

scott.eastman@edlenergy.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)