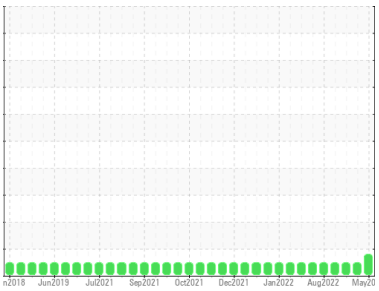
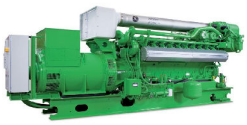
OIL ANALYSIS REPORT

Sample Rating Trend



WEAR



Machine Id
Durham unit 1 (S/N 6181411)
Component
Biogas Engine
Fluid
D-A Lubricant Blue Flame HB-8 40W (130 GAL)

DIAGNOSIS

Recommendation
No corrective action is recommended at this time. Resample at the next service interval to monitor.

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

Contamination
There is no indication of any contamination in the oil.

Fluid Condition
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WCM2249834**	WCM2249829	WCM2249790
Sample Date		Client Info		**17 May 2024**	02 Apr 2024	25 Jun 2023
Machine Age	hrs	Client Info		**1572**	506	11951
Oil Age	hrs	Client Info		**1572**	506	1068
Oil Changed		Client Info		**Not Changd**	N/A	N/A
Sample Status				**ABNORMAL**	NORMAL	NORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>4.0	**<1.0**	<1.0	<1.0
Water		WC Method	>.2	**NEG**	NEG	NEG
Glycol		WC Method		**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>20	**6**	3	9
Chromium	ppm	ASTM D5185m	>5	**<1**	0	<1
Nickel	ppm	ASTM D5185m	>2	**<1**	0	<1
Titanium	ppm	ASTM D5185m		**<1**	0	0
Silver	ppm	ASTM D5185m	>5	**<1**	0	0
Aluminum	ppm	ASTM D5185m	>15	**4**	2	4
Lead	ppm	ASTM D5185m	>20	**2**	0	0
Copper	ppm	ASTM D5185m	>15	▲ **16**	5	<1
Tin	ppm	ASTM D5185m	>5	**2**	0	2
Vanadium	ppm	ASTM D5185m		**<1**	0	0
Cadmium	ppm	ASTM D5185m		**<1**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**64**	55	0
Barium	ppm	ASTM D5185m		**0**	0	0
Molybdenum	ppm	ASTM D5185m		**2**	<1	7
Manganese	ppm	ASTM D5185m		**<1**	0	0
Magnesium	ppm	ASTM D5185m		**8**	4	45
Calcium	ppm	ASTM D5185m		**1556**	1539	2517
Phosphorus	ppm	ASTM D5185m		**313**	284	362
Zinc	ppm	ASTM D5185m		**354**	323	475
Sulfur	ppm	ASTM D5185m		**1901**	2086	4065

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>200	**79**	31	158
Sodium	ppm	ASTM D5185m	>20	**0**	2	0
Potassium	ppm	ASTM D5185m	>20	**3**	0	3

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>2	**0**	0	0.1
Nitration	Abs/cm	*ASTM D7624	>20	**8.2**	6.7	7.3
Sulfation	Abs/.1mm	*ASTM D7415	>30	**19.7**	16.2	23.8

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**15.0**	11.4	14.2
Acid Number (AN)	mg KOH/g	ASTM D8045		**1.92**	1.34	0.21
Base Number (BN)	mg KOH/g	ASTM D2896	8	**3.62**	4.00	5.09

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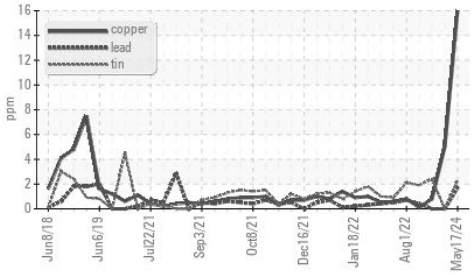
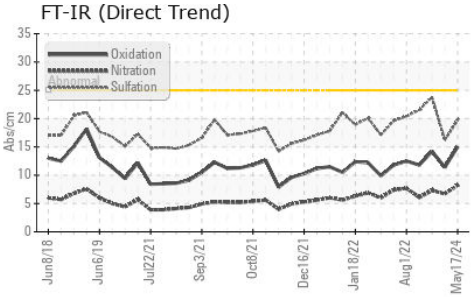
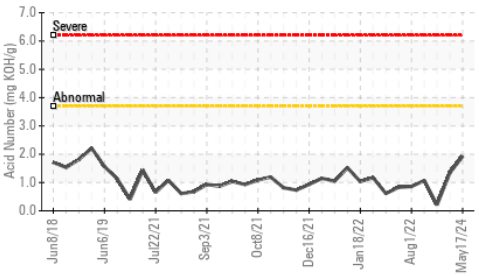
Non-ferrous Metals



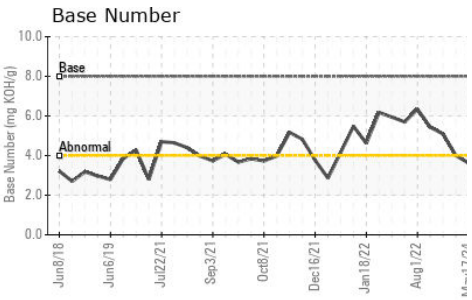
FT-IR (Direct Trend)



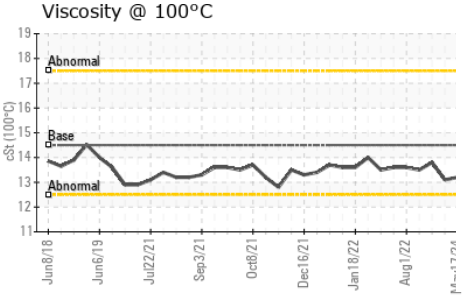
Acid Number



Base Number



Viscosity @ 100°C

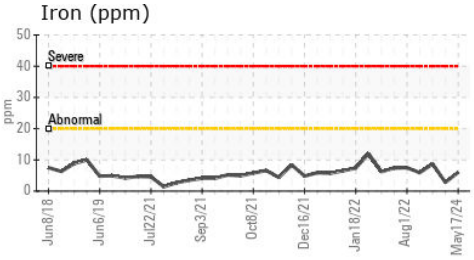


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	LIGHT
Sand/Dirt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Appearance	scalar	*Visual	NORML	**NORML**	NORML	NORML
Odor	scalar	*Visual	NORML	**NORML**	NORML	NORML
Emulsified Water	scalar	*Visual	>.2	**NEG**	NEG	NEG
Free Water	scalar	*Visual		**NEG**	NEG	NEG

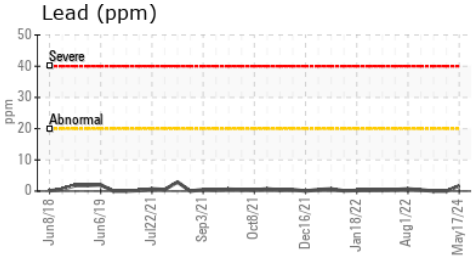
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14.5	**13.2**	13.1	13.8

GRAPHS

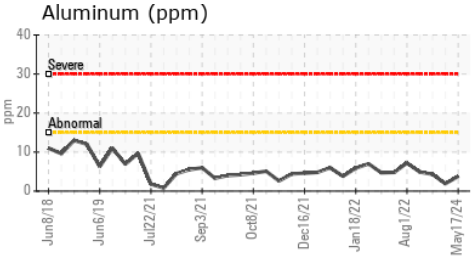
Iron (ppm)



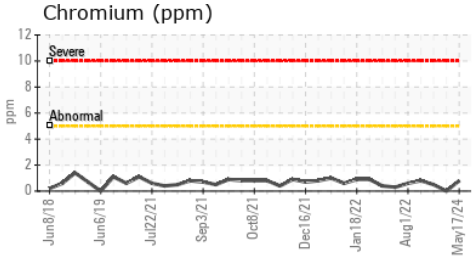
Lead (ppm)



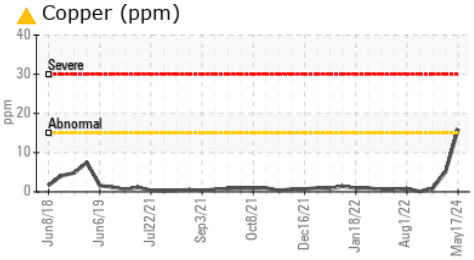
Aluminum (ppm)



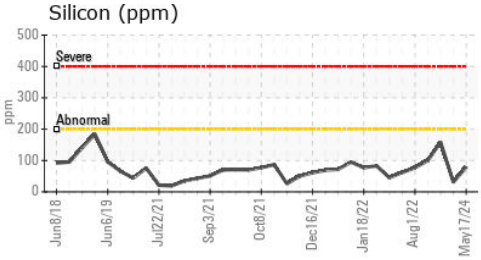
Chromium (ppm)



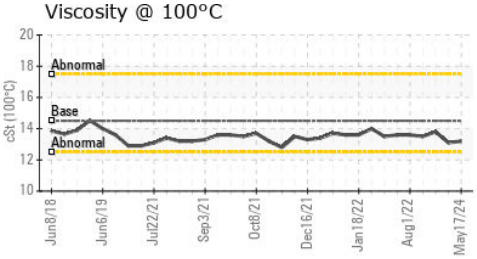
Copper (ppm)



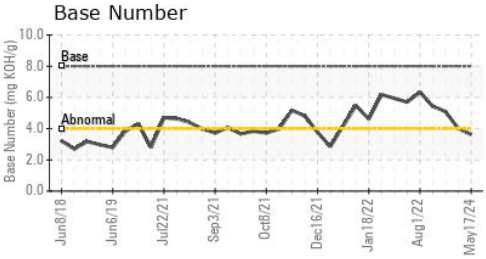
Silicon (ppm)



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WCM2249834
Lab Number : 06184530
Unique Number : 11035856
Test Package : MOB 2

Received : 20 May 2024
Tested : 21 May 2024
Diagnosed : 22 May 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: METDUR [WUSCAR] 06184530 (Generated: 05/22/2024 16:03:01) Rev: 1

Submitted By: ?