MAR III

WEAR CHECK

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINANTS	ABNORMAL
OIL CONDITION	NORMAL

Machine Id
12A02#01 - Main Eng #1 (S/N M4888)
Component
Port Main Engine
Fluid
MOBIL MOBILGARD 410 NC (750 LTR)

RECOMMENDATION

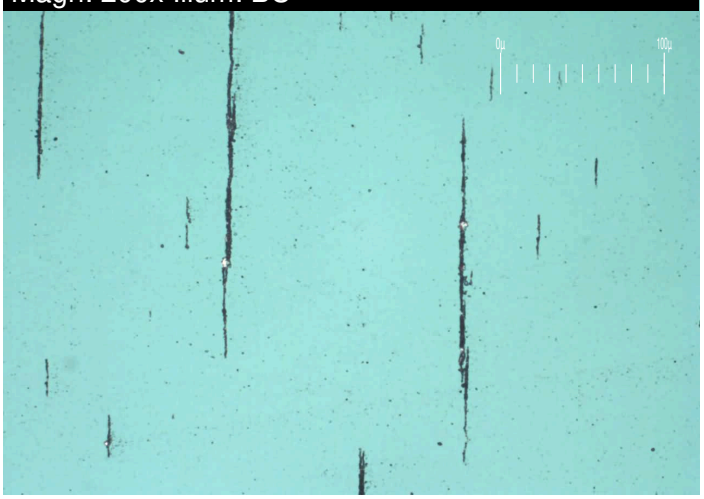
We advise that you check the efficiency of the lube oil purifier. We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. We recommend you service the filters on this component. We recommend an early resample to monitor this condition.

WEAR

All component wear rates are normal. The direct-reading & analytical ferrographic results are normal indicating no abnormal wear in the system.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0839698	WC0839687	WC0656980
Sample Date		Client Info		22 Apr 2024	04 Jan 2024	21 Apr 2023
Machine Age	hrs	Client Info		80700	79980	79229
Oil Age	hrs	Client Info		4224	0	0
Filter Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Filter Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				ABNORMAL	ABNORMAL	ABNORMAL
PQ		ASTM D8184*		0	0	0
Iron	ppm	ASTM D5185(m)	>50	8	9	7
Chromium	ppm	ASTM D5185(m)	>10	2	4	1
Nickel	ppm	ASTM D5185(m)	>11	0	<1	<1
Titanium	ppm	ASTM D5185(m)	>3	0	0	0
Silver	ppm	ASTM D5185(m)	>2	0	0	0
Aluminum	ppm	ASTM D5185(m)	>5	3	3	3
Lead	ppm	ASTM D5185(m)	>10	0	<1	<1
Copper	ppm	ASTM D5185(m)	>20	1	2	1
Tin	ppm	ASTM D5185(m)	>1	0	<1	<1
Vanadium	ppm	ASTM D5185(m)		0	0	0
Large Particles		DR-Ferr*		11.2	6.2	3.2
Small Particles		DR-Ferr*		8.2	4.8	2.6
Total Particles		DR-Ferr*	>---	19.4	11	5.8
Large Particles Percentage	%	DR-Ferr*		15.5	12.7	10.3
Severity Index		DR-Ferr*		34	9	2
Ferrous Rubbing	Scale 0-10	ASTM D7684*		2	2	3
Ferrous Sliding	Scale 0-10	ASTM D7684*				
Ferrous Cutting	Scale 0-10	ASTM D7684*				
Ferrous Rolling	Scale 0-10	ASTM D7684*		1	1	1
Ferrous Break-in	Scale 0-10	ASTM D7684*				
Ferrous Spheres	Scale 0-10	ASTM D7684*				
Ferrous Black Oxides	Scale 0-10	ASTM D7684*		1		
Ferrous Red Oxides	Scale 0-10	ASTM D7684*				
Ferrous Corrosive	Scale 0-10	ASTM D7684*				1
Ferrous Other	Scale 0-10	ASTM D7684*				
Nonferrous Rubbing	Scale 0-10	ASTM D7684*				
Nonferrous Sliding	Scale 0-10	ASTM D7684*				
Nonferrous Cutting	Scale 0-10	ASTM D7684*				
Nonferrous Rolling	Scale 0-10	ASTM D7684*				
Nonferrous Other	Scale 0-10	ASTM D7684*				

Magn: 200x Illum: BC



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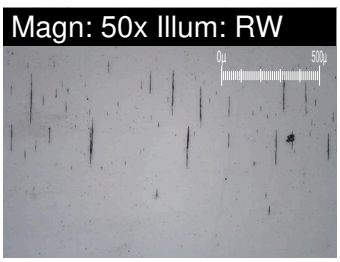

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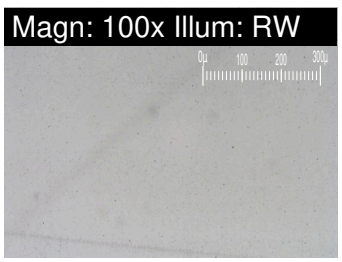


CONTAMINANTS

There is a moderate concentration of dirt present in the oil.

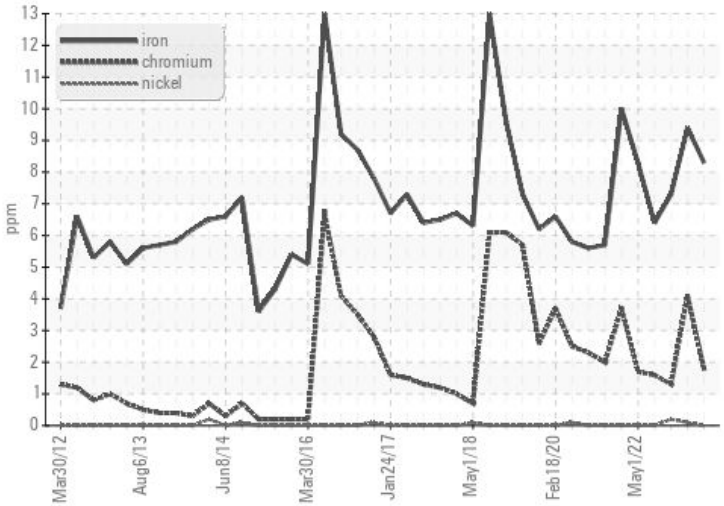
Silicon	ppm	ASTM D5185(m)	>5	▲ **8**	▲ 9	▲ 9
Potassium	ppm	ASTM D5185(m)	>20	**<1**	<1	0
Fuel		WC Method	>4.0	**<1.0**	<1.0	<1.0
Water		WC Method	>0.1	**NEG**	NEG	NEG
Glycol		WC Method		**NEG**	NEG	NEG
Soot %	%	ASTM D7844*		**0.2**	0.3	0.2
Nitration	Abs/cm	ASTM D7624*	>20	**11.9**	12.5	11.4
Sulfation	Abs/.1mm	ASTM D7415*	>30	**23.0**	23.1	21.8
Emulsified Water	scalar	Visual*	>0.1	**NEG**	NEG	NEG
Carbonaceous Material	Scale 0-10	ASTM D7684*				1
Sand/Dirt	Scale 0-10	ASTM D7684*		**1**		1
Fibres	Scale 0-10	ASTM D7684*				
Spheres	Scale 0-10	ASTM D7684*				
Other	Scale 0-10	ASTM D7684*		**1**	1	1

OIL CONDITION

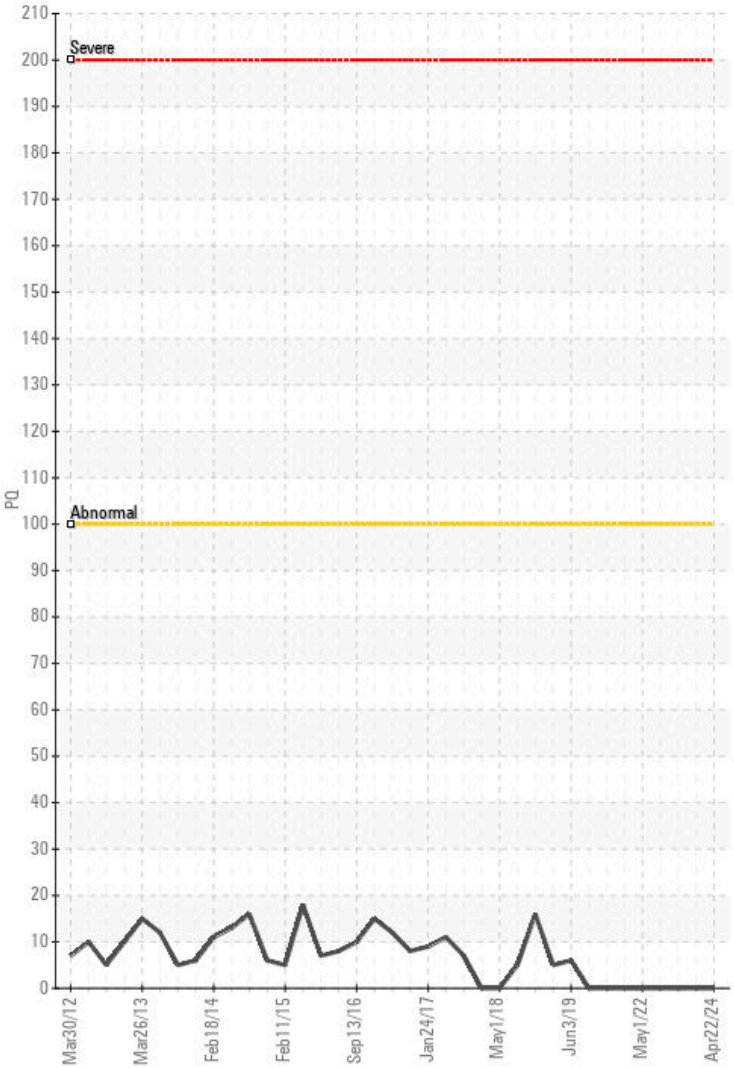
The BN result indicates that there is suitable alkalinity remaining in the oil.

Sodium	ppm	ASTM D5185(m)	>75	**4**	6	5
Boron	ppm	ASTM D5185(m)		**8**	7	6
Barium	ppm	ASTM D5185(m)		**0**	0	0
Molybdenum	ppm	ASTM D5185(m)		**0**	<1	<1
Manganese	ppm	ASTM D5185(m)		**0**	0	<1
Magnesium	ppm	ASTM D5185(m)		**10**	10	9
Calcium	ppm	ASTM D5185(m)		**3106**	3111	3258
Phosphorus	ppm	ASTM D5185(m)		**2**	2	2
Zinc	ppm	ASTM D5185(m)	10	**3**	3	3
Sulfur	ppm	ASTM D5185(m)		**3551**	3764	3816
Oxidation	Abs/.1mm	ASTM D7414*	>25	**17.6**	18.0	16.4
Base Number (BN)	mg KOH/g	ASTM D2896*	10.0	**8.69**	7.54	8.63
Visc @ 100°C	cSt	ASTM D7279(m)	14.4	**15.2**	15.2	15.0
Lubricant Degradation	Scale 0-10	ASTM D7684*				

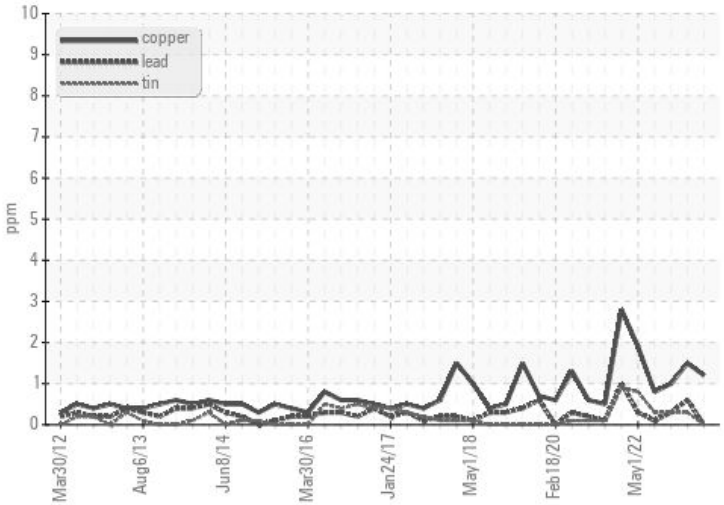
Ferrous Alloys



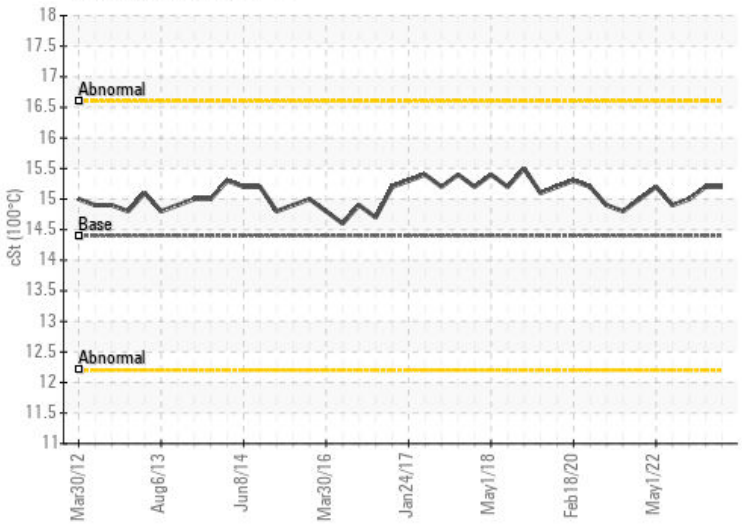
PQ



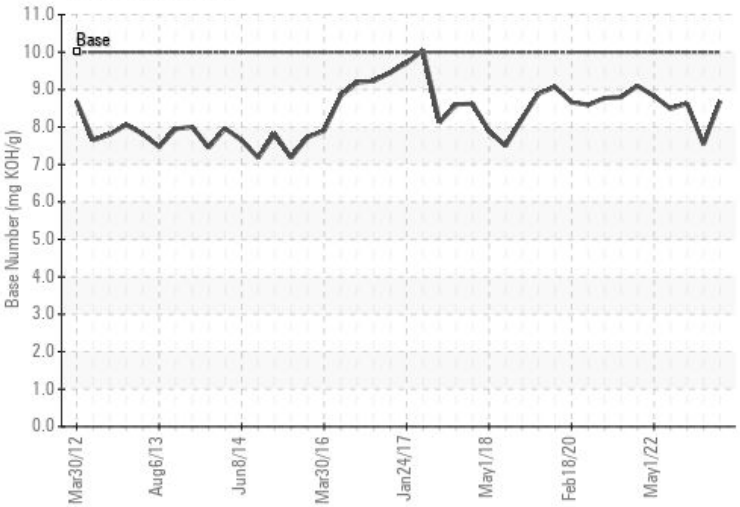
Non-ferrous Metals



Viscosity @ 100°C



Base Number



ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0839698
Lab Number : 02635163
Unique Number : 5776316
Test Package : MAR 3

Received : 14 May 2024
Tested : 15 May 2024
Diagnosed : 15 May 2024 - Kevin Marson

To discuss this sample report, contact Customer Service at 1-800-268-2131.
Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
Validity of results and interpretation are based on the sample and information as supplied.

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