MAR II

WEAR CHECK Inland Marine Oil Analysis Program

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
MCKENZIE M
Component
Starboard Genset
Fluid
DIESEL ENGINE OIL SAE 15W40 (3 GAL)

RECOMMENDATION

Resample at the next service interval to monitor. Please specify the component make and model with your next sample. Please specify the brand, type, and viscosity of the oil on your next sample.

WEAR

All component wear rates are normal.

CONTAMINATION

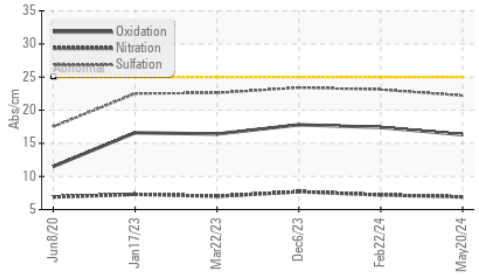
There is no indication of any contamination in the oil.

FLUID CONDITION

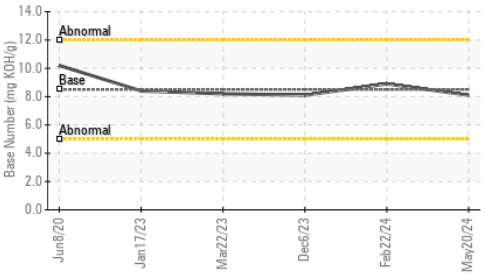
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		**MW0071316**	MW0048137	MW0047935
Sample Date		Client Info		**20 May 2024**	22 Feb 2024	06 Dec 2023
Machine Age	hrs	Client Info		**5043**	4452	3930
Oil Age	hrs	Client Info		**1998**	922	476
Filter Age	hrs	Client Info		**591**	922	476
Oil Changed		Client Info		**Changed**	Changed	Changed
Filter Changed		Client Info		**Changed**	Changed	Changed
Sample Status				**NORMAL**	NORMAL	NORMAL
Iron	ppm	ASTM D5185m	>50	**9**	9	5
Chromium	ppm	ASTM D5185m	>4	**0**	<1	0
Nickel	ppm	ASTM D5185m	>2	**0**	0	0
Titanium	ppm	ASTM D5185m		**0**	<1	0
Silver	ppm	ASTM D5185m	>5	**0**	<1	0
Aluminum	ppm	ASTM D5185m	>12	**4**	5	5
Lead	ppm	ASTM D5185m	>17	**<1**	5	3
Copper	ppm	ASTM D5185m	>70	**0**	1	0
Tin	ppm	ASTM D5185m	>15	**0**	<1	<1
Vanadium	ppm	ASTM D5185m		**0**	<1	0
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silicon	ppm	ASTM D5185m	>25	**6**	7	5
Potassium	ppm	ASTM D5185m	>20	**0**	2	<1
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		**0.1**	0.2	0.3
Nitration	Abs/cm	*ASTM D7624	>20	**6.9**	7.2	7.7
Sulfation	Abs/.1mm	*ASTM D7415	>30	**22.2**	23.1	23.4
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	>0.1	**NEG**	NEG	NEG
Sodium	ppm	ASTM D5185m	>158	**1**	0	0
Boron	ppm	ASTM D5185m	250	**305**	346	341
Barium	ppm	ASTM D5185m	10	**0**	2	0
Molybdenum	ppm	ASTM D5185m	100	**125**	135	114
Manganese	ppm	ASTM D5185m		**0**	<1	<1
Magnesium	ppm	ASTM D5185m	450	**694**	657	609
Calcium	ppm	ASTM D5185m	3000	**1774**	1662	1440
Phosphorus	ppm	ASTM D5185m	1150	**804**	761	775
Zinc	ppm	ASTM D5185m	1350	**964**	902	891
Sulfur	ppm	ASTM D5185m	4250	**3144**	2894	2499
Oxidation	Abs/.1mm	*ASTM D7414	>25	**16.3**	17.4	17.8
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	**8.1**	8.9	8.1
Visc @ 100°C	cSt	ASTM D445	14.4	**13.0**	13.2	13.1

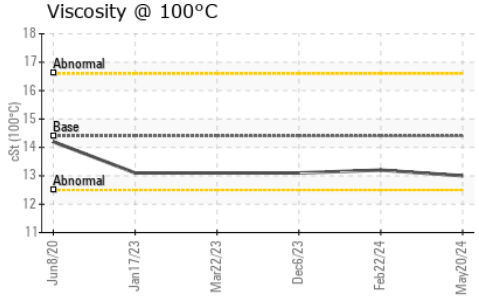
FT-IR (Direct Trend)



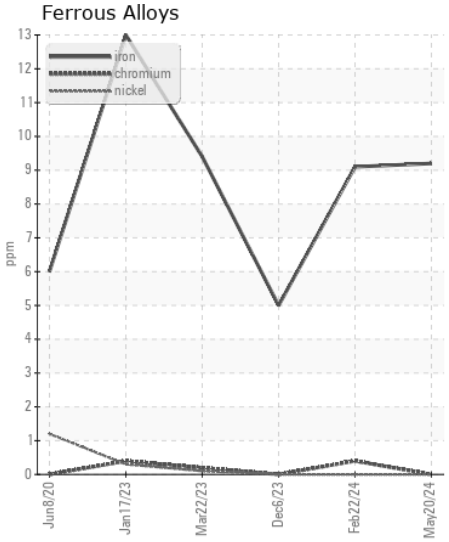
Base Number



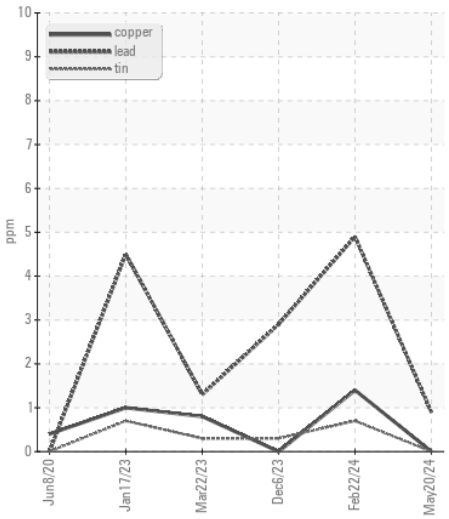
Viscosity @ 100°C



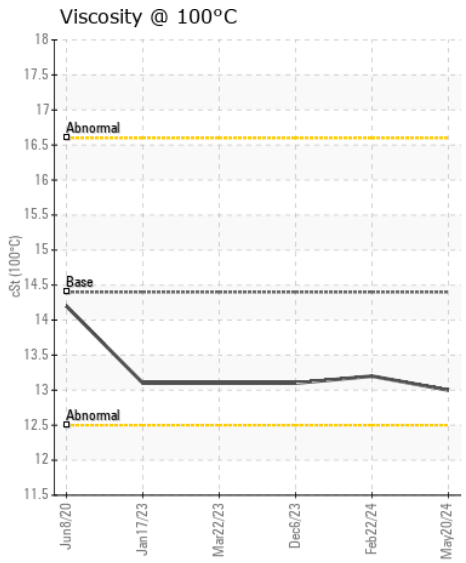
Ferrous Alloys



Non-ferrous Metals



Viscosity @ 100°C



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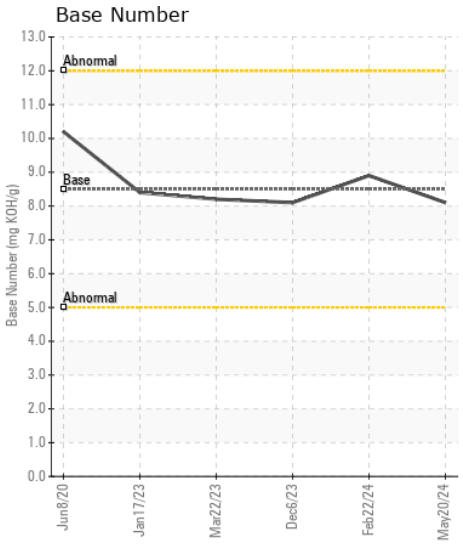

Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : MW0071316
Lab Number : 06211317
Unique Number : 11084181
Test Package : MAR 2

Received : 17 Jun 2024
Tested : 19 Jun 2024
Diagnosed : 19 Jun 2024 - Wes Davis

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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