MAR II

WEAR CHECK Inland Marine Oil Analysis Program

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Area
JOHN R OPERLE
Machine Id
[JOHN R OPERLE] 003 630998-3
Component
Starboard Main Engine
Fluid
CHEVRON DELO 710 LS (300 GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

WEAR

All component wear rates are normal.

CONTAMINATION

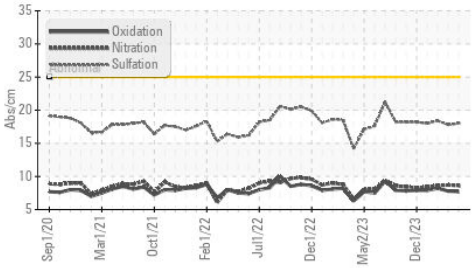
There is no indication of any contamination in the oil.

FLUID CONDITION

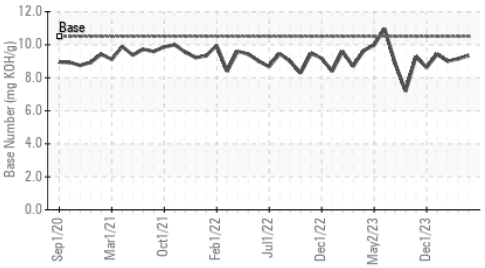
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		MW0066229	MW0066233	MW0066012
Sample Date		Client Info		01 Jul 2024	01 Jun 2024	03 May 2024
Machine Age	hrs	Client Info		63065	62352	61657
Oil Age	hrs	Client Info		15037	14324	13629
Filter Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	Not Changd
Filter Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	NORMAL	NORMAL
Iron	ppm	ASTM D5185m	>75	21	24	24
Chromium	ppm	ASTM D5185m	>8	<1	1	1
Nickel	ppm	ASTM D5185m	>2	0	<1	0
Titanium	ppm	ASTM D5185m	>3	0	<1	0
Silver	ppm	ASTM D5185m	>2	0	<1	0
Aluminum	ppm	ASTM D5185m	>15	2	3	1
Lead	ppm	ASTM D5185m	>18	4	6	6
Copper	ppm	ASTM D5185m	>80	23	27	24
Tin	ppm	ASTM D5185m	>14	5	5	4
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	>20	4	5	5
Potassium	ppm	ASTM D5185m	>20	<1	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	>3	1.5	1.4	1.5
Nitration	Abs/cm	*ASTM D7624	>20	8.6	8.7	8.6
Sulfation	Abs/.1mm	*ASTM D7415	>30	18.0	17.8	18.4
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	>75	3	<1	2
Boron	ppm	ASTM D5185m		36	40	42
Barium	ppm	ASTM D5185m		0	1	<1
Molybdenum	ppm	ASTM D5185m		44	46	45
Manganese	ppm	ASTM D5185m		2	2	1
Magnesium	ppm	ASTM D5185m		13	10	12
Calcium	ppm	ASTM D5185m		3577	3534	3569
Phosphorus	ppm	ASTM D5185m		2	20	0
Zinc	ppm	ASTM D5185m		0	5	12
Sulfur	ppm	ASTM D5185m		2730	2719	2762
Oxidation	Abs/.1mm	*ASTM D7414	>25	7.7	7.8	8.2
Base Number (BN)	mg KOH/g	ASTM D2896	10.5	9.33	9.15	9.00
Visc @ 100°C	cSt	ASTM D445	15.5	14.8	14.8	15.0

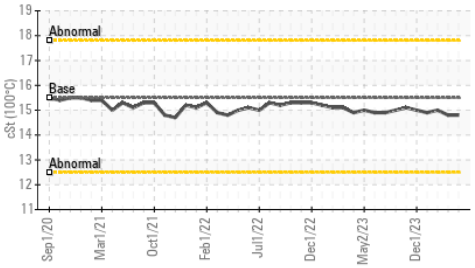
FT-IR (Direct Trend)



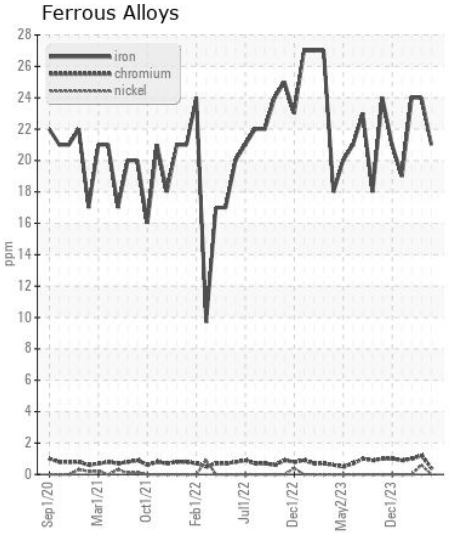
Base Number



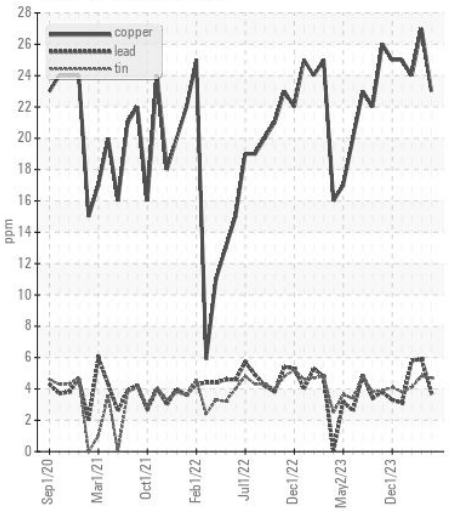
Viscosity @ 100°C



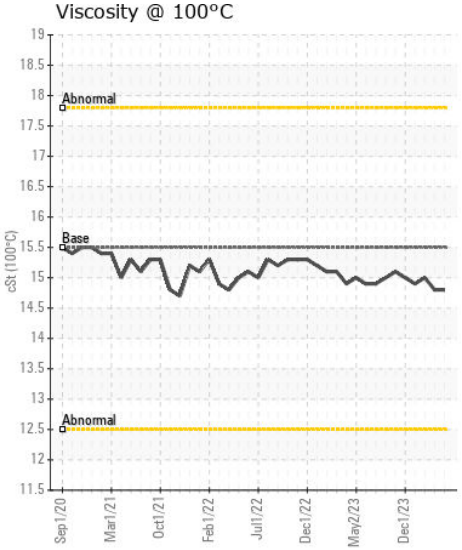
Ferrous Alloys



Non-ferrous Metals



Viscosity @ 100°C



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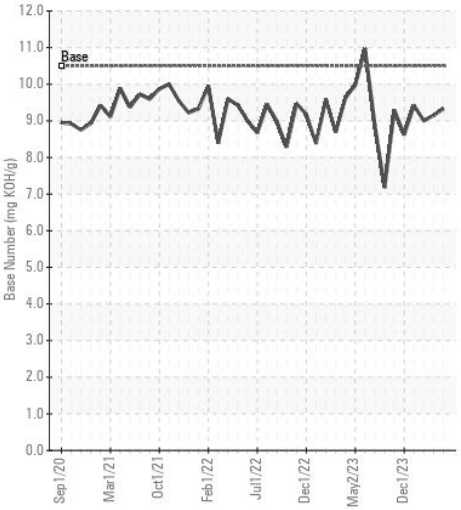

Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : MW0066229
Lab Number : 06227683
Unique Number : 11111176
Test Package : MAR 2

Received : 03 Jul 2024
Tested : 05 Jul 2024
Diagnosed : 05 Jul 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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