



WEAR	<b>NORMAL</b>
CONTAMINATION	<b>NORMAL</b>
FLUID CONDITION	<b>NORMAL</b>

Area

**A J MORRIS**

Machine Id

**[A J MORRIS] 003 550220-3**

Component

**Starboard Main Engine**

Fluid

**CHEVRON DELO 400 LE 15W40 (16 GAL)**

**RECOMMENDATION**

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>MW0066127</b>	MW0062841	MW0064575
Sample Date		Client Info		<b>01 May 2024</b>	11 Apr 2024	01 Mar 2024
Machine Age	hrs	Client Info		<b>41421</b>	40965	40809
Oil Age	hrs	Client Info		<b>252</b>	850	192
Filter Age	hrs	Client Info		<b>252</b>	850	192
Oil Changed		Client Info		<b>Not Changd</b>	Changed	Not Changd
Filter Changed		Client Info		<b>Not Changd</b>	Changed	Not Changd
Sample Status				<b>NORMAL</b>	NORMAL	NORMAL

**WEAR**

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>75	<b>8</b>	7	4
Chromium	ppm	ASTM D5185m	>8	<b>0</b>	<1	0
Nickel	ppm	ASTM D5185m	>2	<b>0</b>	<1	0
Titanium	ppm	ASTM D5185m	>3	<b>0</b>	<1	0
Silver	ppm	ASTM D5185m	>2	<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m	>15	<b>2</b>	3	2
Lead	ppm	ASTM D5185m	>18	<b>16</b>	6	6
Copper	ppm	ASTM D5185m	>80	<b>8</b>	5	3
Tin	ppm	ASTM D5185m	>14	<b>0</b>	<1	0
Vanadium	ppm	ASTM D5185m		<b>0</b>	<1	0
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE

**CONTAMINATION**

There is no indication of any contamination in the oil.

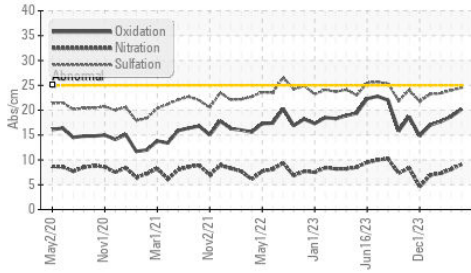
Silicon	ppm	ASTM D5185m	>20	<b>6</b>	7	6
Potassium	ppm	ASTM D5185m	>20	<b>&lt;1</b>	2	0
Fuel		WC Method	>4.0	<b>&lt;1.0</b>	<1.0	<1.0
Water		WC Method	>0.1	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	*ASTM D7844		<b>0.2</b>	0.2	0.1
Nitration	Abs/cm	*ASTM D7624	>20	<b>9.1</b>	8.1	7.3
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>24.5</b>	24.0	23.4
Silt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Debris	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Appearance	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Odor	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	<b>NEG</b>	NEG	NEG

**FLUID CONDITION**

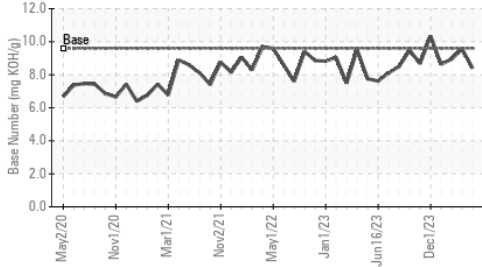
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m	>75	<b>1</b>	0	<1
Boron	ppm	ASTM D5185m		<b>328</b>	382	318
Barium	ppm	ASTM D5185m		<b>&lt;1</b>	2	0
Molybdenum	ppm	ASTM D5185m		<b>130</b>	128	124
Manganese	ppm	ASTM D5185m		<b>2</b>	2	<1
Magnesium	ppm	ASTM D5185m		<b>669</b>	623	676
Calcium	ppm	ASTM D5185m		<b>1722</b>	1576	1693
Phosphorus	ppm	ASTM D5185m	1200	<b>695</b>	700	687
Zinc	ppm	ASTM D5185m	1300	<b>858</b>	815	840
Sulfur	ppm	ASTM D5185m	3200	<b>2922</b>	2889	2608
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>20.2</b>	18.7	17.7
Base Number (BN)	mg KOH/g	ASTM D2896	9.6	<b>8.39</b>	9.55	8.95
Visc @ 100°C	cSt	ASTM D445	15.7	<b>13.2</b>	13.2	13.2

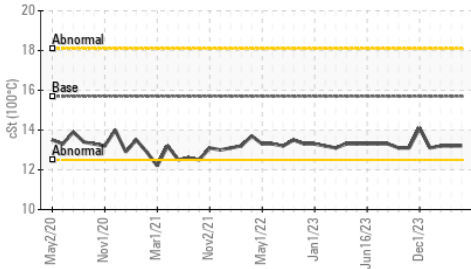
**FT-IR (Direct Trend)**



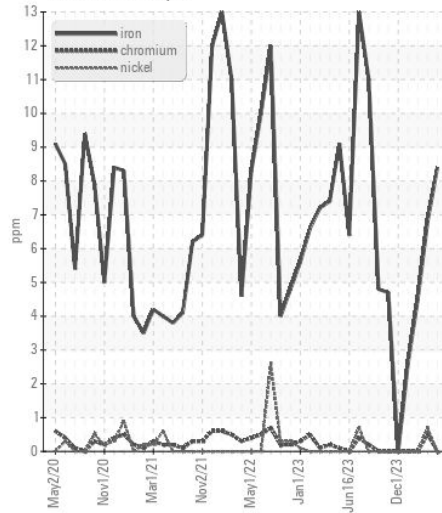
**Base Number**



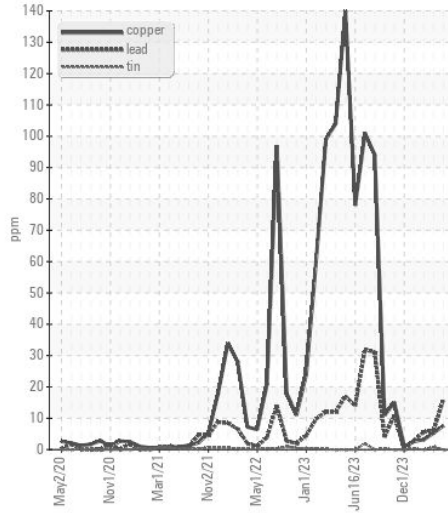
**Viscosity @ 100°C**



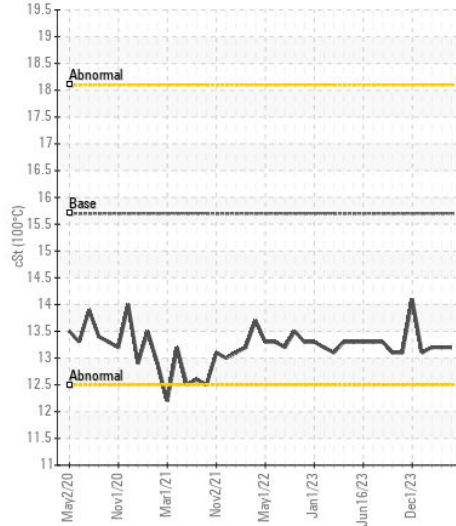
**Ferrous Alloys**



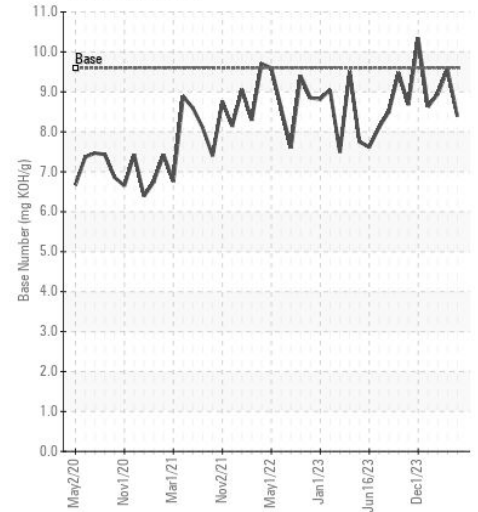
**Non-ferrous Metals**



**Viscosity @ 100°C**



**Base Number**



Certificate L2367

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

**Sample No.** : MW0066127

**Lab Number** : 06176260

**Unique Number** : 11022313

**Test Package** : MAR 2

**Received** : 10 May 2024

**Tested** : 13 May 2024

**Diagnosed** : 13 May 2024 - Wes Davis

**INGRAM BARGE**

900 S 3RD ST

PADUCAH, KY

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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)