



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

Machine Id  
**SANDY LOU**  
Component  
**Starboard Main Engine**  
Fluid  
**CHEVRON DELO 400 SDE SAE 15W40 (18 GAL)**

**RECOMMENDATION**

Resample at the next service interval to monitor. Please specify the component make and model with your next sample.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>MW0059480</b>	MW0047384	MW0047400
Sample Date		Client Info		<b>16 May 2024</b>	13 Mar 2024	30 Jan 2024
Machine Age	hrs	Client Info		<b>386</b>	1294	961
Oil Age	hrs	Client Info		<b>386</b>	334	612
Filter Age	hrs	Client Info		<b>386</b>	334	612
Oil Changed		Client Info		<b>Changed</b>	Changed	Changed
Filter Changed		Client Info		<b>Changed</b>	Changed	Changed
Sample Status				<b>NORMAL</b>	NORMAL	NORMAL

**WEAR**

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>75	<b>4</b>	5	8
Chromium	ppm	ASTM D5185m	>8	<b>&lt;1</b>	<1	<1
Nickel	ppm	ASTM D5185m	>2	<b>0</b>	<1	0
Titanium	ppm	ASTM D5185m	>3	<b>15</b>	14	13
Silver	ppm	ASTM D5185m	>2	<b>&lt;1</b>	0	0
Aluminum	ppm	ASTM D5185m	>15	<b>2</b>	2	1
Lead	ppm	ASTM D5185m	>18	<b>&lt;1</b>	<1	1
Copper	ppm	ASTM D5185m	>80	<b>3</b>	2	6
Tin	ppm	ASTM D5185m	>14	<b>&lt;1</b>	<1	2
Vanadium	ppm	ASTM D5185m		<b>&lt;1</b>	<1	<1
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.

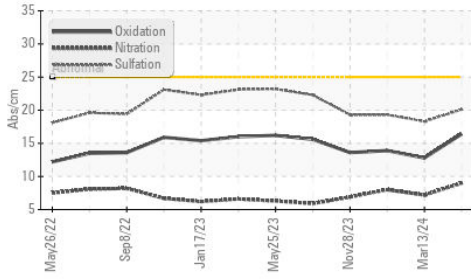
Silicon	ppm	ASTM D5185m	>20	<b>5</b>	4	3
Potassium	ppm	ASTM D5185m	>20	<b>4</b>	3	2
Fuel		WC Method	>4.0	<b>&lt;1.0</b>	<1.0	<1.0
Water		WC Method	>0.1	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	*ASTM D7844		<b>0.2</b>	0.1	0.2
Nitration	Abs/cm	*ASTM D7624	>20	<b>9.0</b>	7.2	8.0
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>20.1</b>	18.3	19.3
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**

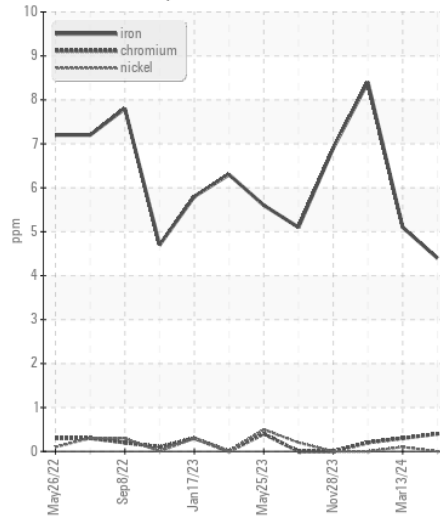
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m	>75	<b>2</b>	3	3
Boron	ppm	ASTM D5185m		<b>129</b>	135	147
Barium	ppm	ASTM D5185m		<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185m		<b>38</b>	41	50
Manganese	ppm	ASTM D5185m		<b>0</b>	0	<1
Magnesium	ppm	ASTM D5185m		<b>690</b>	713	710
Calcium	ppm	ASTM D5185m		<b>1450</b>	1517	1513
Phosphorus	ppm	ASTM D5185m	760	<b>647</b>	784	730
Zinc	ppm	ASTM D5185m	800	<b>798</b>	867	829
Sulfur	ppm	ASTM D5185m	3000	<b>3010</b>	3546	2981
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>16.4</b>	12.8	13.9
Base Number (BN)	mg KOH/g	ASTM D2896	10	<b>7.5</b>	8.6	8.4
Visc @ 100°C	cSt	ASTM D445	14.6	<b>13.1</b>	13.1	12.9

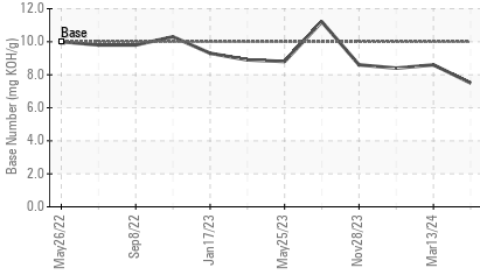
**FT-IR (Direct Trend)**



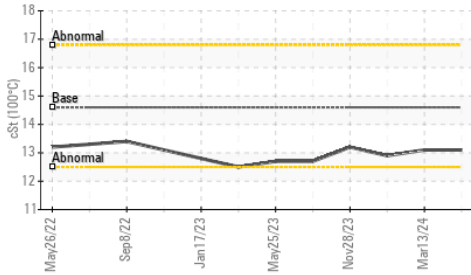
**Ferrous Alloys**



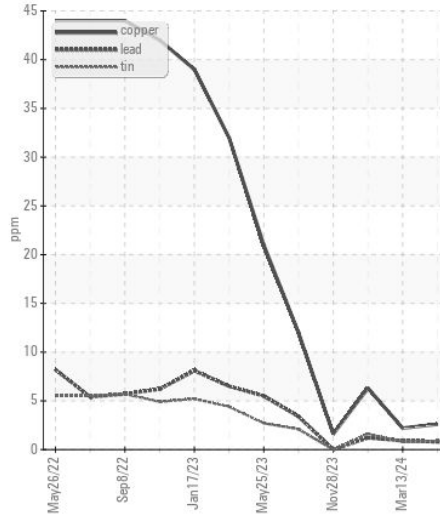
**Base Number**



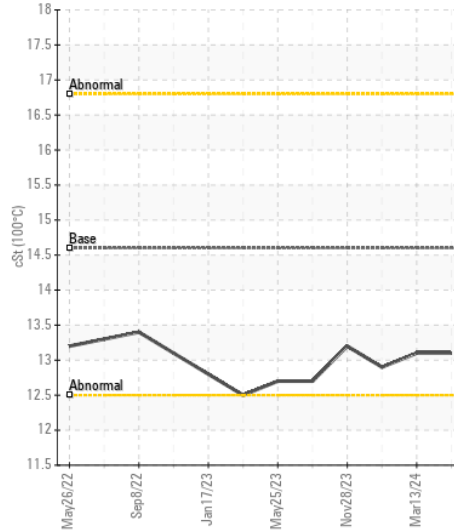
**Viscosity @ 100°C**



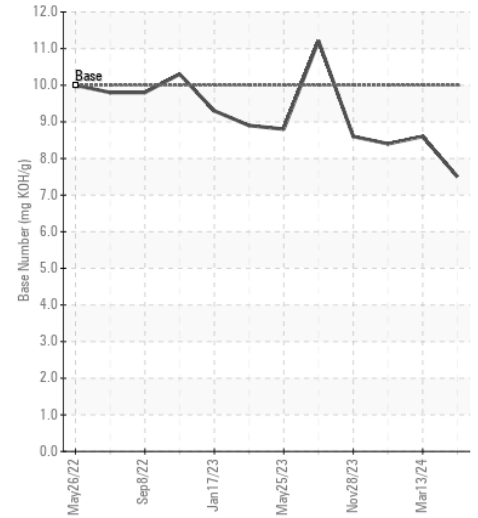
**Non-ferrous Metals**



**Viscosity @ 100°C**



**Base Number**



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : MW0059480  
**Lab Number** : 06188693  
**Unique Number** : 11045445  
**Test Package** : MAR 2  
**Received** : 23 May 2024  
**Tested** : 24 May 2024  
**Diagnosed** : 28 May 2024 - Sean Felton

**OSAGE MARINE**  
 750 E DAVIS ST  
 ST LOUIS, MO  
 US 63111

Contact: MIKE KESSLER  
 mike.kessler@osagemarine.com

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)

T:  
F: