



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

Area  
**SANDY B**  
Machine Id  
[SANDY B] 003 562531-3  
Component  
Starboard Main Engine  
Fluid  
SHELL ROTELLA T 15W40 (--- GAL)

**RECOMMENDATION**

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>MW0068800</b>	MW0068847	MW0061656
Sample Date		Client Info		<b>03 May 2024</b>	06 Apr 2024	02 Jan 2024
Machine Age	hrs	Client Info		<b>4399</b>	4044	2682
Oil Age	hrs	Client Info		<b>335</b>	470	203
Filter Age	hrs	Client Info		<b>335</b>	470	203
Oil Changed		Client Info		<b>Not Changd</b>	Not Changd	Not Changd
Filter Changed		Client Info		<b>Not Changd</b>	Not Changd	Not Changd
Sample Status				<b>NORMAL</b>	NORMAL	NORMAL

**WEAR**

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>75	<b>&lt;1</b>	7	0
Chromium	ppm	ASTM D5185m	>8	<b>&lt;1</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>&lt;1</b>	<1	2
Lead	ppm	ASTM D5185m	>18	<b>0</b>	1	0
Copper	ppm	ASTM D5185m	>80	<b>0</b>	1	1
Tin	ppm	ASTM D5185m	>14	<b>&lt;1</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.

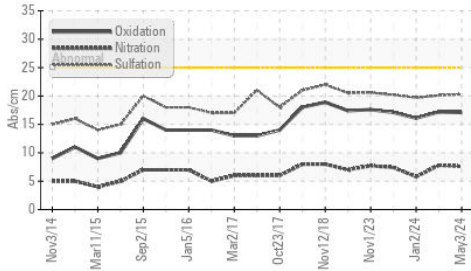
Silicon	ppm	ASTM D5185m	>20	<b>2</b>	4	4
Potassium	ppm	ASTM D5185m	>20	<b>6</b>	10	5
Fuel		WC Method	>4.0	<b>&lt;1.0</b>	<1.0	<1.0
Water		WC Method	>0.1	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	*ASTM D7844		<b>0.1</b>	0.1	0
Nitration	Abs/cm	*ASTM D7624	>20	<b>7.6</b>	7.8	5.8
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>20.3</b>	20.1	19.7
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**

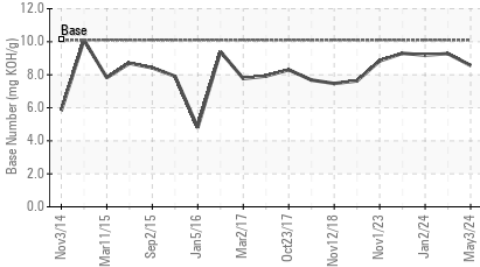
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m	>75	<b>2</b>	0	0
Boron	ppm	ASTM D5185m	316	<b>186</b>	189	181
Barium	ppm	ASTM D5185m	0.0	<b>1</b>	0	0
Molybdenum	ppm	ASTM D5185m	1.2	<b>12</b>	11	5
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	<1	2
Magnesium	ppm	ASTM D5185m	24	<b>62</b>	56	36
Calcium	ppm	ASTM D5185m	2292	<b>2098</b>	2137	2044
Phosphorus	ppm	ASTM D5185m	1064	<b>987</b>	1014	935
Zinc	ppm	ASTM D5185m	1160	<b>1123</b>	1147	1117
Sulfur	ppm	ASTM D5185m	4996	<b>3846</b>	3889	3283
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>17.1</b>	17.2	16.1
Base Number (BN)	mg KOH/g	ASTM D2896	10.1	<b>8.56</b>	9.28	9.19
Visc @ 100°C	cSt	ASTM D445	15.7	<b>13.6</b>	13.6	13.8

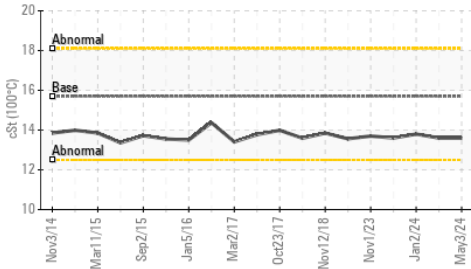
**FT-IR (Direct Trend)**



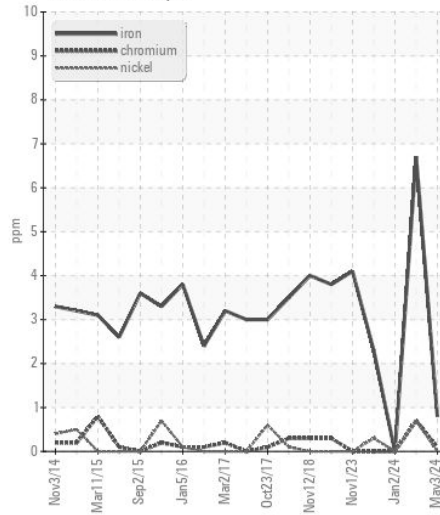
**Base Number**



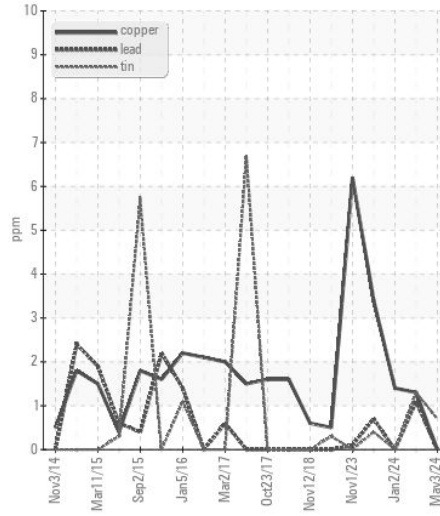
**Viscosity @ 100°C**



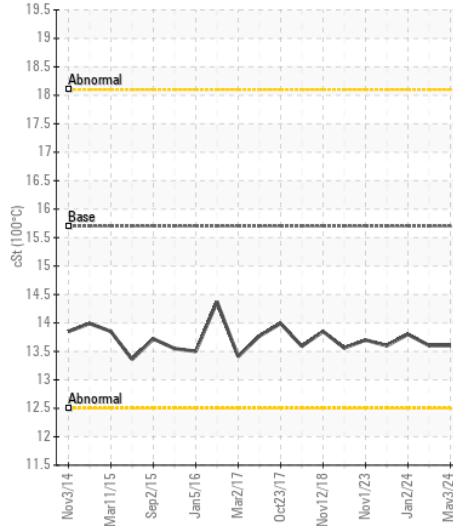
**Ferrous Alloys**



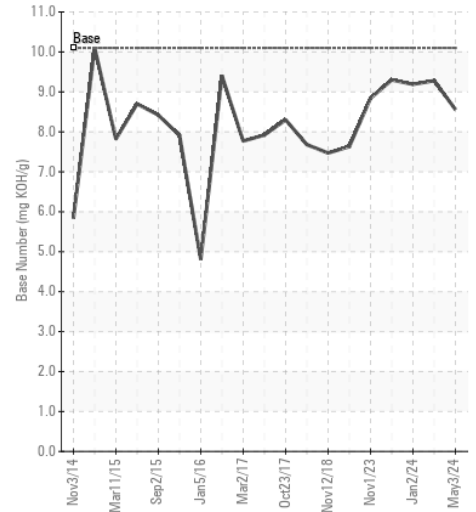
**Non-ferrous Metals**



**Viscosity @ 100°C**



**Base Number**



Certificate L2367

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

**Sample No.** : MW0068800

**Lab Number** : 06177903

**Unique Number** : 11029229

**Test Package** : MAR 2

**Received** : 13 May 2024

**Tested** : 14 May 2024

**Diagnosed** : 15 May 2024 - Sean Felton

**INGRAM BARGE**

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US 42003

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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)