



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

Area  
**MARTHA INGRAM**  
Machine Id  
[**MARTHA INGRAM**] 003 589419-3  
Component  
**Starboard Main Engine**  
Fluid  
**CHEVRON DELO 710 LS (350 GAL)**

**RECOMMENDATION**

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>MW0061467</b>	MW0064318	MW0053586
Sample Date		Client Info		<b>01 May 2024</b>	31 Jan 2024	01 Aug 2023
Machine Age	hrs	Client Info		<b>16713</b>	14692	10346
Oil Age	hrs	Client Info		<b>16713</b>	14692	10346
Filter Age	hrs	Client Info		<b>0</b>	626	471
Oil Changed		Client Info		<b>Not Chngd</b>	N/A	Not Chngd
Filter Changed		Client Info		<b>Not Chngd</b>	N/A	Changed
Sample Status				<b>NORMAL</b>	NORMAL	NORMAL

**WEAR**

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>75	<b>9</b>	17	15
Chromium	ppm	ASTM D5185m	>8	<b>1</b>	2	2
Nickel	ppm	ASTM D5185m	>2	<b>0</b>	0	<1
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>1</b>	3	4
Lead	ppm	ASTM D5185m	>18	<b>4</b>	7	9
Copper	ppm	ASTM D5185m	>80	<b>15</b>	26	21
Tin	ppm	ASTM D5185m	>14	<b>4</b>	6	7
Vanadium	ppm	ASTM D5185m		<b>0</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.

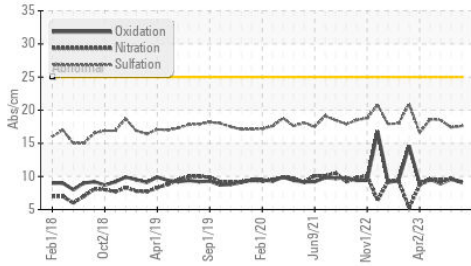
Silicon	ppm	ASTM D5185m	>20	<b>4</b>	5	5
Potassium	ppm	ASTM D5185m	>20	<b>&lt;1</b>	2	2
Fuel		WC Method	>4.0	<b>&lt;1.0</b>	<1.0	<1.0
Water		WC Method	>0.1	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	*ASTM D7844	>3	<b>0.8</b>	0.8	1.2
Nitration	Abs/cm	*ASTM D7624	>20	<b>9.1</b>	9.6	9.5
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>17.6</b>	17.4	18.5
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**

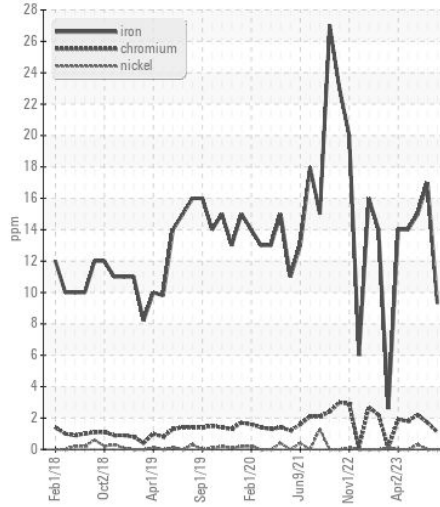
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m	>75	<b>19</b>	<1	4
Boron	ppm	ASTM D5185m		<b>40</b>	40	34
Barium	ppm	ASTM D5185m		<b>1</b>	0	0
Molybdenum	ppm	ASTM D5185m		<b>45</b>	52	49
Manganese	ppm	ASTM D5185m		<b>2</b>	<1	<1
Magnesium	ppm	ASTM D5185m		<b>25</b>	10	10
Calcium	ppm	ASTM D5185m		<b>3294</b>	3681	3753
Phosphorus	ppm	ASTM D5185m		<b>18</b>	9	8
Zinc	ppm	ASTM D5185m		<b>13</b>	3	5
Sulfur	ppm	ASTM D5185m		<b>2560</b>	2492	2649
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>9.2</b>	9.6	8.9
Base Number (BN)	mg KOH/g	ASTM D2896	10.5	<b>9.01</b>	9.55	9.79
Visc @ 100°C	cSt	ASTM D445	15.5	<b>15.0</b>	15.4	15.4

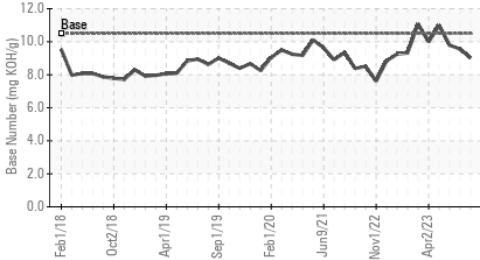
**FT-IR (Direct Trend)**



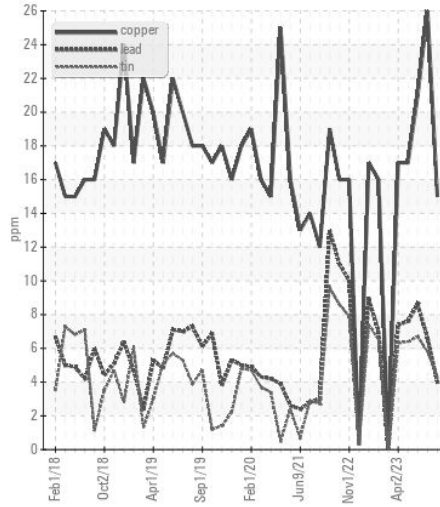
**Ferrous Alloys**



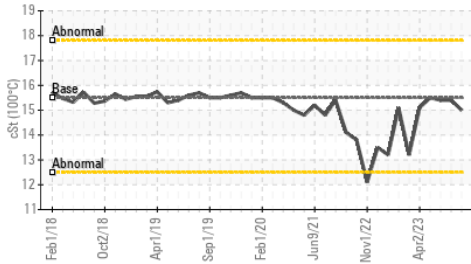
**Base Number**



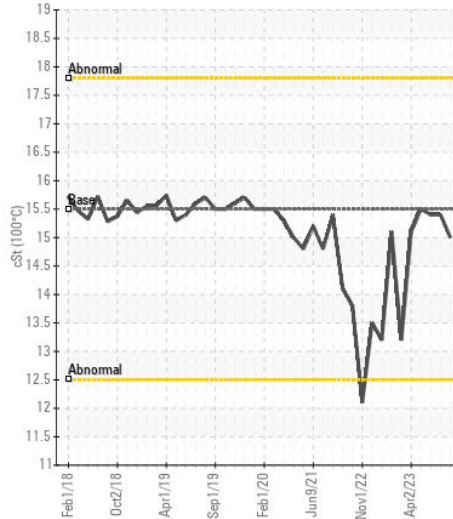
**Non-ferrous Metals**



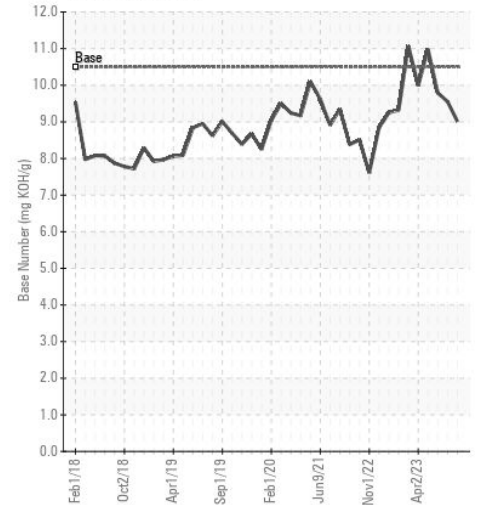
**Viscosity @ 100°C**



**Viscosity @ 100°C**



**Base Number**



Certificate L2367

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

**Sample No.** : MW0061467

**Lab Number** : 06177897

**Unique Number** : 11029223

**Test Package** : MAR 2

**Received** : 13 May 2024

**Tested** : 14 May 2024

**Diagnosed** : 14 May 2024 - Wes Davis

**INGRAM BARGE**

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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)