



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

Area  
**BRIAN RAFFERTY**  
Machine Id  
**[BRIAN RAFFERTY] 003 566616-3**  
Component  
**Starboard Main Engine**  
Fluid  
**CHEVRON DELO 710 LE (300 GAL)**

**RECOMMENDATION**

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>MW0062792</b>	MW0055650	MW0055654
Sample Date		Client Info		<b>05 Jan 2024</b>	01 Dec 2023	01 Nov 2023
Machine Age	hrs	Client Info		<b>23644</b>	20020	19276
Oil Age	hrs	Client Info		<b>23644</b>	20020	19276
Filter Age	hrs	Client Info		<b>351</b>	99	605
Oil Changed		Client Info		<b>N/A</b>	Not Changd	Not Changd
Filter Changed		Client Info		<b>N/A</b>	N/A	Changed
Sample Status				<b>NORMAL</b>	NORMAL	NORMAL

**WEAR**

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>75	<b>21</b>	18	22
Chromium	ppm	ASTM D5185m	>8	<b>1</b>	2	2
Nickel	ppm	ASTM D5185m	>2	<b>0</b>	<1	<1
Titanium	ppm	ASTM D5185m	>3	<b>0</b>	<1	<1
Silver	ppm	ASTM D5185m	>2	<b>0</b>	0	<1
Aluminum	ppm	ASTM D5185m	>15	<b>1</b>	2	2
Lead	ppm	ASTM D5185m	>18	<b>9</b>	7	7
Copper	ppm	ASTM D5185m	>80	<b>33</b>	22	24
Tin	ppm	ASTM D5185m	>14	<b>5</b>	5	5
Vanadium	ppm	ASTM D5185m		<b>0</b>	0	<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.

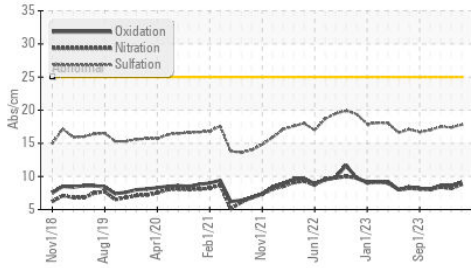
Silicon	ppm	ASTM D5185m	>20	<b>5</b>	6	7
Potassium	ppm	ASTM D5185m	>20	<b>2</b>	5	5
Fuel		WC Method	>4.0	<b>&lt;1.0</b>	<1.0	<1.0
Water		WC Method	>0.1	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	*ASTM D7844	>3	<b>0.8</b>	0.8	0.8
Nitration	Abs/cm	*ASTM D7624	>20	<b>8.8</b>	8.2	8.4
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>17.8</b>	17.4	17.5
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**

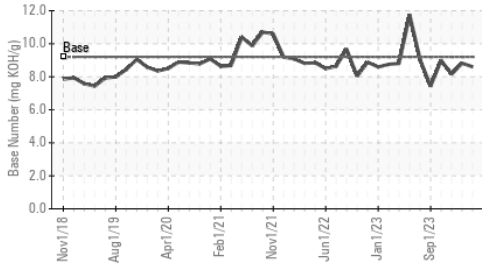
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m	>75	<b>2</b>	1	<1
Boron	ppm	ASTM D5185m		<b>45</b>	43	44
Barium	ppm	ASTM D5185m		<b>&lt;1</b>	0	0
Molybdenum	ppm	ASTM D5185m		<b>50</b>	50	54
Manganese	ppm	ASTM D5185m		<b>2</b>	1	1
Magnesium	ppm	ASTM D5185m		<b>15</b>	17	15
Calcium	ppm	ASTM D5185m		<b>3531</b>	3449	3473
Phosphorus	ppm	ASTM D5185m		<b>2</b>	6	11
Zinc	ppm	ASTM D5185m	10	<b>25</b>	0	2
Sulfur	ppm	ASTM D5185m		<b>2732</b>	2487	2522
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>9.1</b>	8.6	8.6
Base Number (BN)	mg KOH/g	ASTM D2896	9.2	<b>8.6</b>	8.82	8.15
Visc @ 100°C	cSt	ASTM D445	15.5	<b>14.6</b>	14.4	14.4

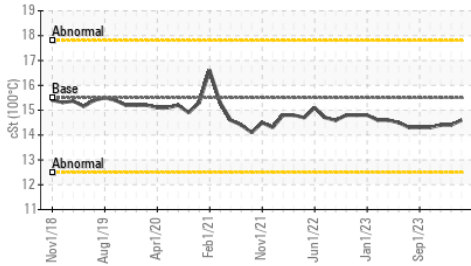
**FT-IR (Direct Trend)**



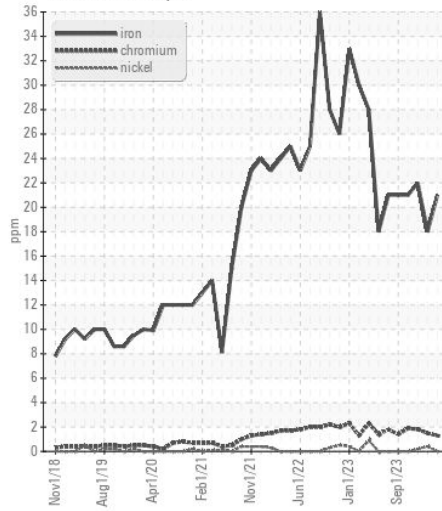
**Base Number**



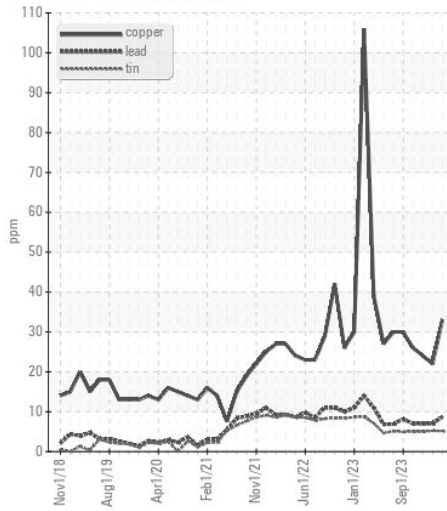
**Viscosity @ 100°C**



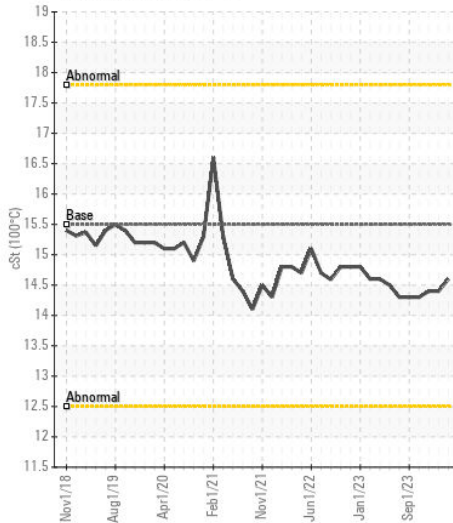
**Ferrous Alloys**



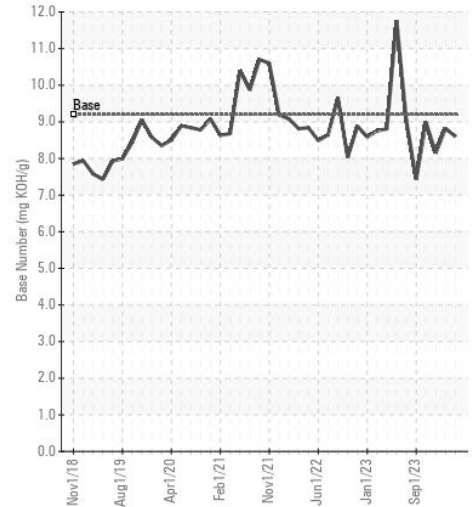
**Non-ferrous Metals**



**Viscosity @ 100°C**



**Base Number**



Certificate L2367

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

**Sample No.** : MW0062792

**Lab Number** : 06176253

**Unique Number** : 11022306

**Test Package** : MAR 2

**Received** : 10 May 2024

**Tested** : 16 May 2024

**Diagnosed** : 16 May 2024 - Sean Felton

**INGRAM BARGE**

900 S 3RD ST

PADUCAH, KY

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)