



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

Area  
**SAMUEL B RICHMOND**  
Machine Id  
[SAMUEL B RICHMOND] 003 652589-3  
Component  
Starboard Main Engine  
Fluid  
CHEVRON DELO 710 LS (--- GAL)

**RECOMMENDATION**

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>MW0064515</b>	MW0062877	MW0053851
Sample Date		Client Info		<b>01 Apr 2024</b>	01 Feb 2024	01 Dec 2023
Machine Age	hrs	Client Info		<b>62984</b>	61950	61732
Oil Age	hrs	Client Info		<b>62984</b>	61950	61732
Filter Age	hrs	Client Info		<b>0</b>	0	0
Oil Changed		Client Info		<b>N/A</b>	N/A	N/A
Filter Changed		Client Info		<b>N/A</b>	N/A	N/A
Sample Status				<b>NORMAL</b>	NORMAL	NORMAL

**WEAR**

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>75	<b>16</b>	10	16
Chromium	ppm	ASTM D5185m	>8	<b>&lt;1</b>	<1	<1
Nickel	ppm	ASTM D5185m	>2	<b>2</b>	3	1
Titanium	ppm	ASTM D5185m	>3	<b>&lt;1</b>	0	<1
Silver	ppm	ASTM D5185m	>2	<b>0</b>	<1	0
Aluminum	ppm	ASTM D5185m	>15	<b>2</b>	3	2
Lead	ppm	ASTM D5185m	>18	<b>6</b>	4	6
Copper	ppm	ASTM D5185m	>80	<b>17</b>	9	16
Tin	ppm	ASTM D5185m	>14	<b>4</b>	3	3
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.

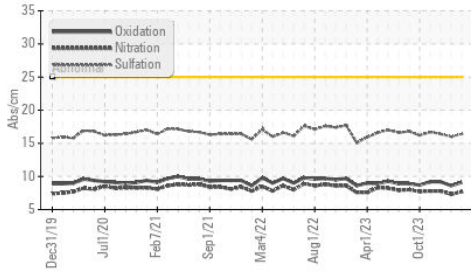
Silicon	ppm	ASTM D5185m	>20	<b>5</b>	4	5
Potassium	ppm	ASTM D5185m	>20	<b>2</b>	4	2
Fuel		WC Method	>4.0	<b>&lt;1.0</b>	<1.0	<1.0
Water		WC Method	>0.1	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	*ASTM D7844	>3	<b>0.2</b>	0.2	0.2
Nitration	Abs/cm	*ASTM D7624	>20	<b>7.7</b>	7.3	7.8
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>16.4</b>	16.0	16.4
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**

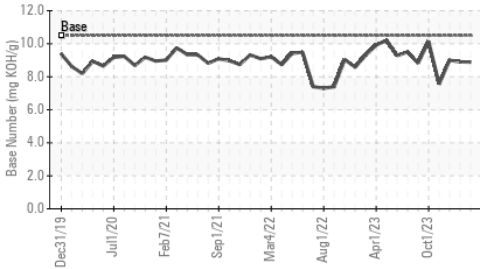
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m	>75	<b>4</b>	5	4
Boron	ppm	ASTM D5185m		<b>45</b>	36	44
Barium	ppm	ASTM D5185m		<b>&lt;1</b>	0	3
Molybdenum	ppm	ASTM D5185m		<b>50</b>	38	50
Manganese	ppm	ASTM D5185m		<b>2</b>	<1	1
Magnesium	ppm	ASTM D5185m		<b>9</b>	15	9
Calcium	ppm	ASTM D5185m		<b>3537</b>	2901	3568
Phosphorus	ppm	ASTM D5185m		<b>9</b>	2	14
Zinc	ppm	ASTM D5185m		<b>1</b>	0	0
Sulfur	ppm	ASTM D5185m		<b>2329</b>	2160	2419
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>9.1</b>	8.6	9.2
Base Number (BN)	mg KOH/g	ASTM D2896	10.5	<b>8.88</b>	8.90	9.00
Visc @ 100°C	cSt	ASTM D445	15.5	<b>14.4</b>	14.5	14.5

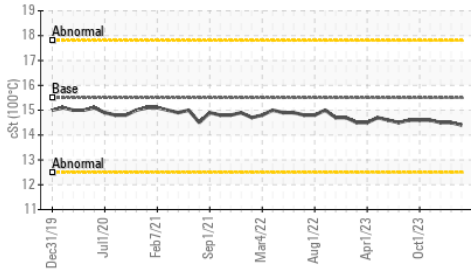
**FT-IR (Direct Trend)**



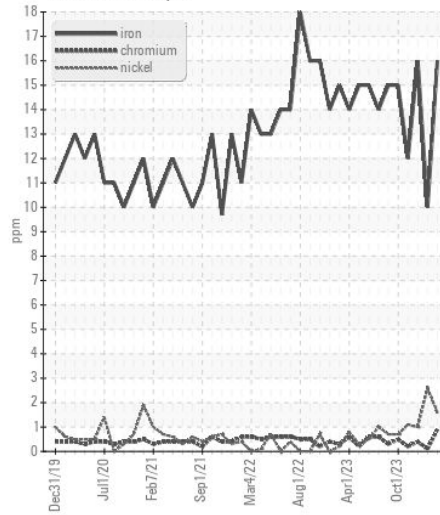
**Base Number**



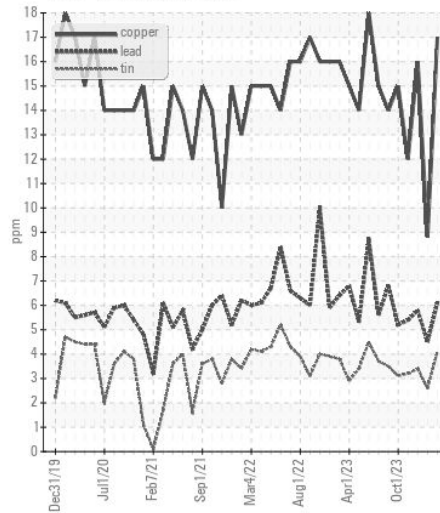
**Viscosity @ 100°C**



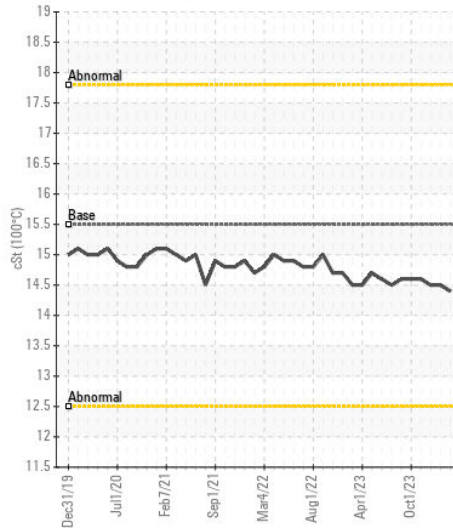
**Ferrous Alloys**



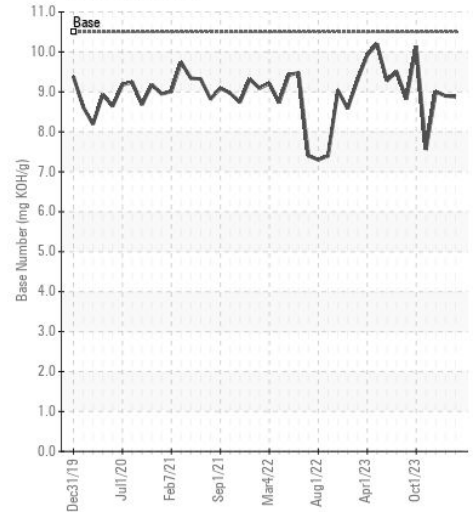
**Non-ferrous Metals**



**Viscosity @ 100°C**



**Base Number**



Certificate L2367

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

**Sample No.** : MW0064515

**Lab Number** : 06146699

**Unique Number** : 10976777

**Test Package** : MAR 2

**Received** : 11 Apr 2024

**Tested** : 12 Apr 2024

**Diagnosed** : 12 Apr 2024 - Wes Davis

**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)