



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

Machine Id  
**MRC**  
Component  
**Starboard Main Engine**  
Fluid  
**CHEVRON DELO 400 XLE 15W40 (--- GAL)**

**RECOMMENDATION**

No corrective action is recommended at this time. We recommend an early resample to monitor this condition.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>MW05765707</b>	MW05745139	MW05718174
Sample Date		Client Info		<b>12 Feb 2023</b>	19 Jan 2023	14 Dec 2022
Machine Age	hrs	Client Info		<b>5677</b>	5048	4301
Oil Age	hrs	Client Info		<b>2594</b>	1964	1194
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>ABNORMAL</b>	ABNORMAL	ABNORMAL

**WEAR**

Bearing wear is indicated. All other component wear rates are normal.

Iron	ppm	ASTM D5185m	>75	<b>21</b>	15	15
Chromium	ppm	ASTM D5185m	>8	<b>&lt;1</b>	<1	<1
Nickel	ppm	ASTM D5185m	>2	<b>0</b>	0	0
Titanium	ppm	ASTM D5185m	>3	<b>2</b>	2	2
Silver	ppm	ASTM D5185m	>2	<b>0</b>	0	<1
Aluminum	ppm	ASTM D5185m	>15	<b>2</b>	2	2
Lead	ppm	ASTM D5185m	>18	<b>▲ 57</b>	▲ 38	▲ 29
Copper	ppm	ASTM D5185m	>80	<b>● 65</b>	● 67	13
Tin	ppm	ASTM D5185m	>14	<b>2</b>	0	<1
Vanadium	ppm	ASTM D5185m		<b>0</b>	0	0
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE

**CONTAMINATION**

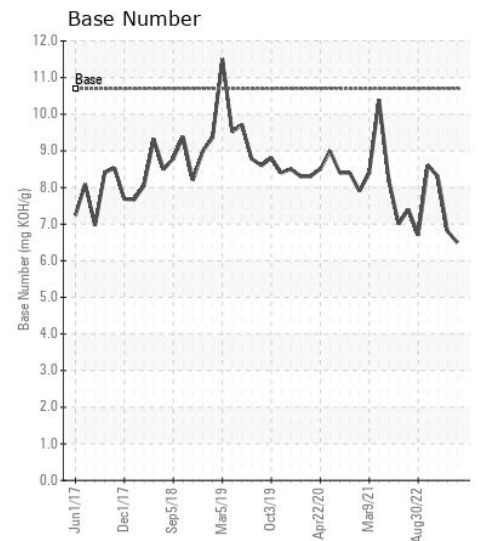
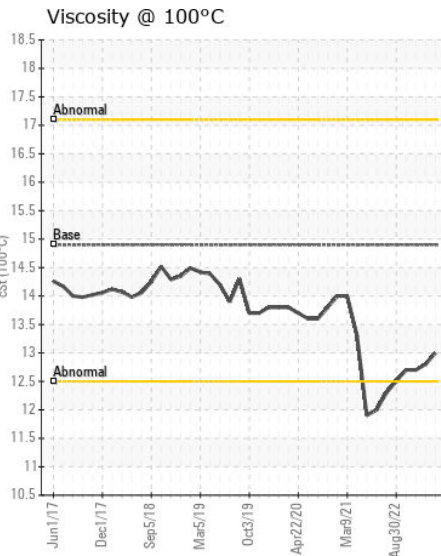
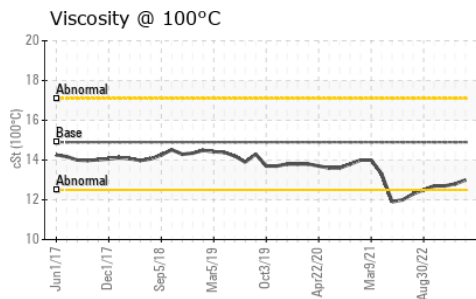
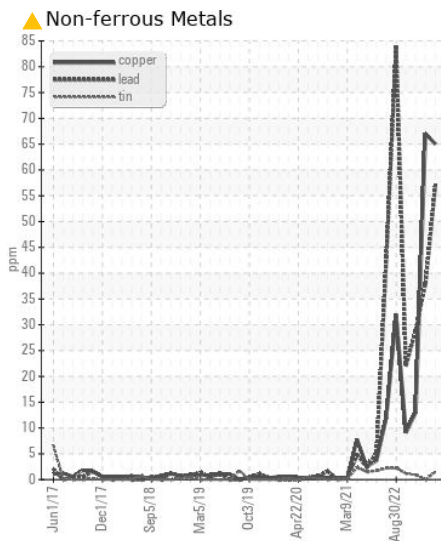
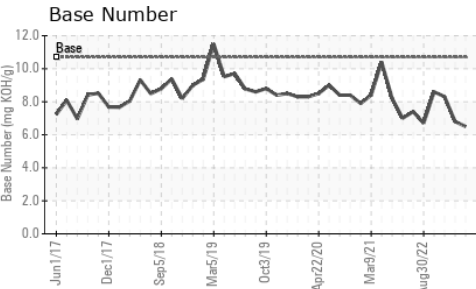
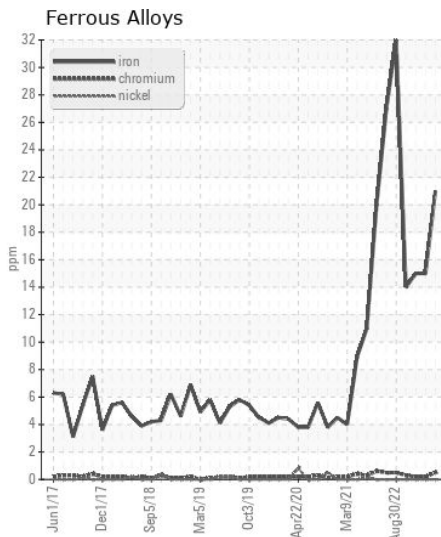
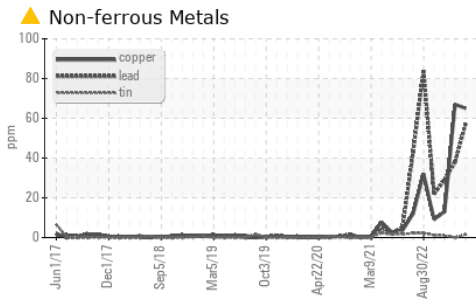
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>20	<b>5</b>	4	3
Potassium	ppm	ASTM D5185m	>20	<b>0</b>	0	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>0.8</b>	0.7	0.6
Nitration	Abs/cm	*ASTM D7624	>20	<b>9.9</b>	9.6	9.5
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>25.3</b>	24.4	25.2
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 acceptable for the time in service.

Sodium	ppm	ASTM D5185m	>75	<b>2</b>	0	0
Boron	ppm	ASTM D5185m		<b>169</b>	184	188
Barium	ppm	ASTM D5185m		<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185m		<b>101</b>	95	107
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	<1	<1
Magnesium	ppm	ASTM D5185m		<b>565</b>	512	543
Calcium	ppm	ASTM D5185m		<b>1579</b>	1447	1567
Phosphorus	ppm	ASTM D5185m	760	<b>684</b>	633	719
Zinc	ppm	ASTM D5185m	830	<b>832</b>	740	879
Sulfur	ppm	ASTM D5185m	2770	<b>3017</b>	2629	2985
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>20.9</b>	19.6	19.5
Base Number (BN)	mg KOH/g	ASTM D2896	10.7	<b>6.5</b>	6.8	8.3
Visc @ 100°C	cSt	ASTM D445	14.9	<b>13.0</b>	12.8	12.7



Certificate L2367

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

**Sample No.** : MW05765707

**Lab Number** : 05765707

**Unique Number** : 10335315

**Test Package** : MAR 2

**Received** : 13 Feb 2023

**Tested** : 14 Feb 2023

**Diagnosed** : 15 Feb 2023 - Don Baldrige

**ILLINOIS MARINE TOWING**

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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)