



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

Machine Id  
**HBR**  
Component  
**Starboard Main Engine**  
Fluid  
**CHEVRON DELO 400 XLE 15W40 (11 GAL)**

**RECOMMENDATION**

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>MW05774583</b>	MW05745131	MW05718322
Sample Date		Client Info		<b>22 Feb 2023</b>	19 Jan 2023	14 Dec 2022
Machine Age	hrs	Client Info		<b>23276</b>	22657	22067
Oil Age	hrs	Client Info		<b>2339</b>	1720	1131
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>5</b>	1	4
Chromium	ppm	ASTM D5185m	>8	<b>&lt;1</b>	0	<1
Nickel	ppm	ASTM D5185m	>2	<b>0</b>	0	0
Titanium	ppm	ASTM D5185m	>3	<b>0</b>	0	<1
Silver	ppm	ASTM D5185m	>2	<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m	>15	<b>2</b>	1	2
Lead	ppm	ASTM D5185m	>18	<b>2</b>	0	<1
Copper	ppm	ASTM D5185m	>80	<b>0</b>	<1	<1
Tin	ppm	ASTM D5185m	>14	<b>&lt;1</b>	0	<1
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**

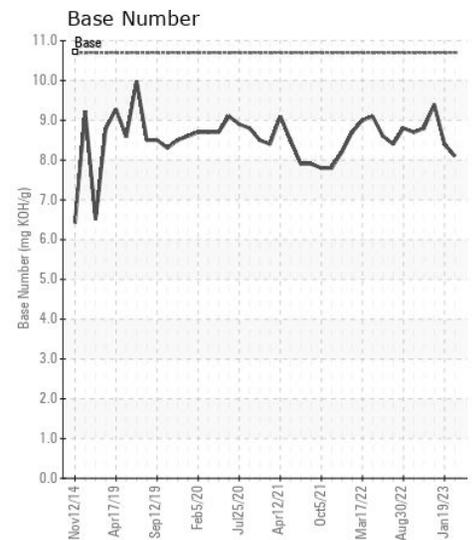
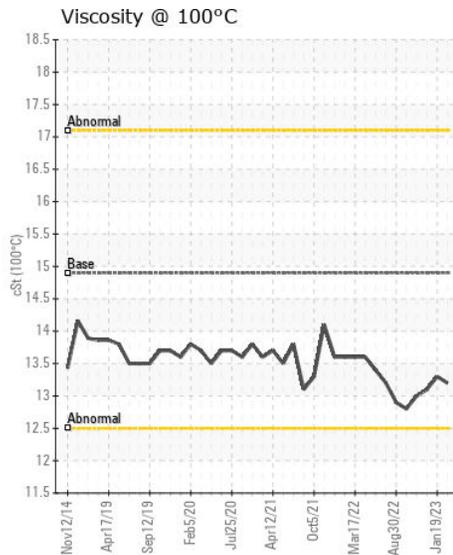
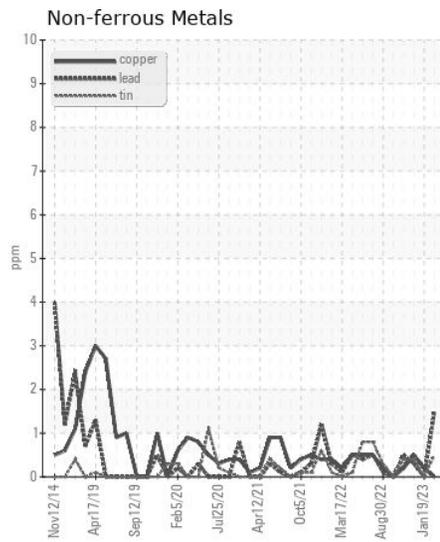
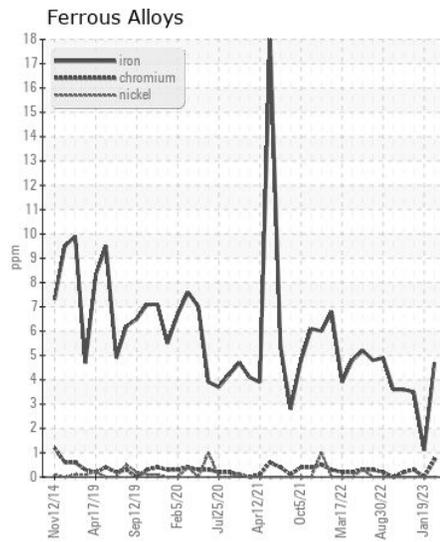
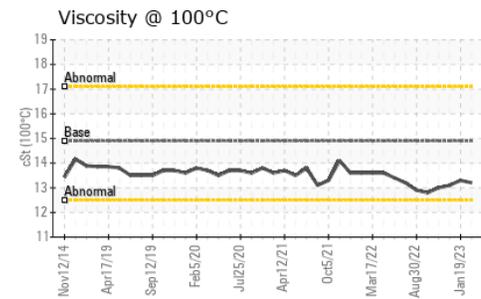
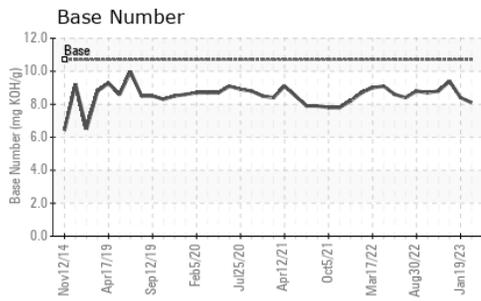
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>20	<b>6</b>	5	6
Potassium	ppm	ASTM D5185m	>20	<b>2</b>	0	0
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>0.7</b>	0.7	0.7
Nitration	Abs/cm	*ASTM D7624	>20	<b>6.5</b>	6.5	7.0
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>22.3</b>	22.1	24.0
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>0</b>	0	<1
Boron	ppm	ASTM D5185m		<b>302</b>	338	312
Barium	ppm	ASTM D5185m		<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185m		<b>100</b>	97	107
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	<1	<1
Magnesium	ppm	ASTM D5185m		<b>526</b>	480	557
Calcium	ppm	ASTM D5185m		<b>1622</b>	1470	1546
Phosphorus	ppm	ASTM D5185m	760	<b>792</b>	668	723
Zinc	ppm	ASTM D5185m	830	<b>997</b>	776	845
Sulfur	ppm	ASTM D5185m	2770	<b>2926</b>	2731	2882
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>14.9</b>	14.8	16.3
Base Number (BN)	mg KOH/g	ASTM D2896	10.7	<b>8.1</b>	8.4	9.4
Visc @ 100°C	cSt	ASTM D445	14.9	<b>13.2</b>	13.3	13.1



Certificate L2367

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

**Sample No.** : MW05774583

**Lab Number** : 05774583

**Unique Number** : 10349200

**Test Package** : MAR 2

**Received** : 23 Feb 2023

**Tested** : 24 Feb 2023

**Diagnosed** : 24 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)