



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

Machine Id  
**HAL PANNELL (S/N 81-M1-1073)**  
Component  
**Starboard Main Engine**  
Fluid  
**CHEVRON DELO 710 LS (380 GAL)**

**RECOMMENDATION**

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>MW0069616</b>	MW0066378	MW0062360
Sample Date		Client Info		<b>18 May 2024</b>	16 Apr 2024	16 Mar 2024
Machine Age	hrs	Client Info		<b>4728</b>	3990	3318
Oil Age	hrs	Client Info		<b>4728</b>	3990	3318
Filter Age	hrs	Client Info		<b>77</b>	743	112
Oil Changed		Client Info		<b>N/A</b>	Not Changed	N/A
Filter Changed		Client Info		<b>N/A</b>	Changed	N/A
Sample Status				<b>NORMAL</b>	NORMAL	NORMAL

**WEAR**

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>75	<b>13</b>	13	14
Chromium	ppm	ASTM D5185m	>8	<b>2</b>	1	<1
Nickel	ppm	ASTM D5185m	>2	<b>&lt;1</b>	0	0
Titanium	ppm	ASTM D5185m	>3	<b>&lt;1</b>	<1	0
Silver	ppm	ASTM D5185m	>2	<b>1</b>	0	0
Aluminum	ppm	ASTM D5185m	>15	<b>2</b>	2	2
Lead	ppm	ASTM D5185m	>18	<b>3</b>	3	3
Copper	ppm	ASTM D5185m	>80	<b>10</b>	11	15
Tin	ppm	ASTM D5185m	>14	<b>8</b>	8	9
Vanadium	ppm	ASTM D5185m		<b>&lt;1</b>	<1	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.

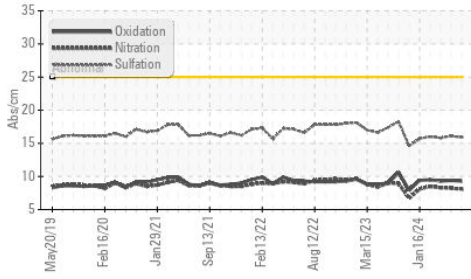
Silicon	ppm	ASTM D5185m	>20	<b>4</b>	3	3
Potassium	ppm	ASTM D5185m	>20	<b>35</b>	48	98
Fuel		WC Method	>4.0	<b>&lt;1.0</b>	<1.0	<1.0
Water		WC Method	>0.1	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	*ASTM D7844	>3	<b>0.2</b>	0.2	0.2
Nitration	Abs/cm	*ASTM D7624	>20	<b>8.1</b>	8.2	8.3
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>15.9</b>	16.1	15.8
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**

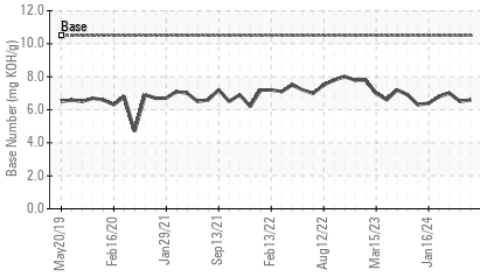
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

Sodium	ppm	ASTM D5185m	>75	<b>6</b>	6	13
Boron	ppm	ASTM D5185m		<b>41</b>	41	39
Barium	ppm	ASTM D5185m		<b>1</b>	0	0
Molybdenum	ppm	ASTM D5185m		<b>49</b>	50	57
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	0	0
Magnesium	ppm	ASTM D5185m		<b>14</b>	13	12
Calcium	ppm	ASTM D5185m		<b>3409</b>	3373	3687
Phosphorus	ppm	ASTM D5185m		<b>19</b>	15	4
Zinc	ppm	ASTM D5185m		<b>11</b>	7	3
Sulfur	ppm	ASTM D5185m		<b>2335</b>	2392	2380
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>9.3</b>	9.4	9.3
Base Number (BN)	mg KOH/g	ASTM D2896	10.5	<b>6.6</b>	6.5	7.0
Visc @ 100°C	cSt	ASTM D445	15.5	<b>14.6</b>	14.8	14.6

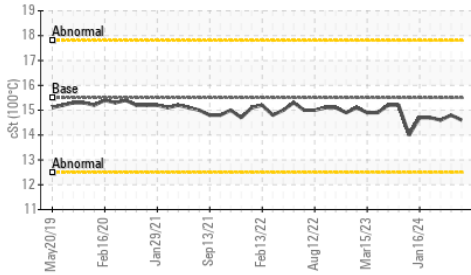
**FT-IR (Direct Trend)**



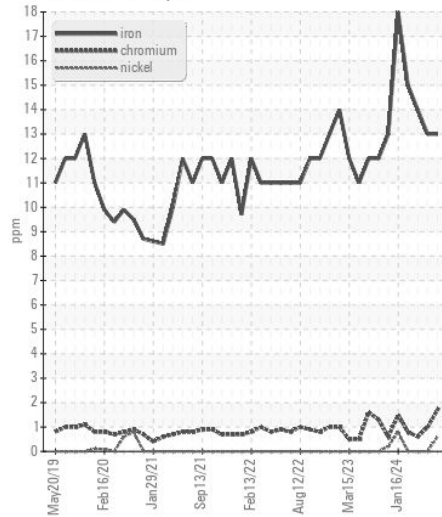
**Base Number**



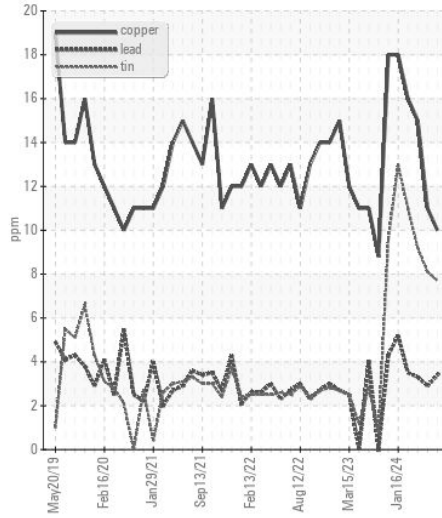
**Viscosity @ 100°C**



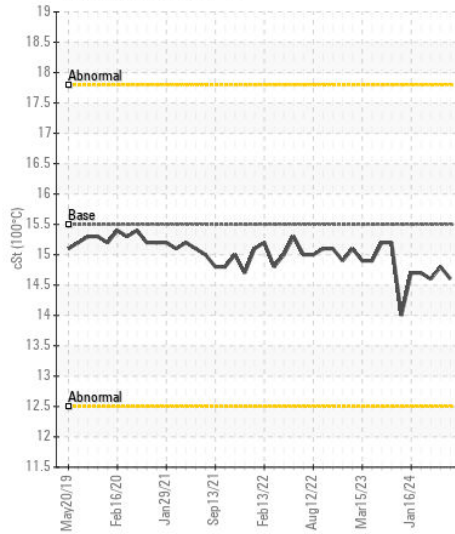
**Ferrous Alloys**



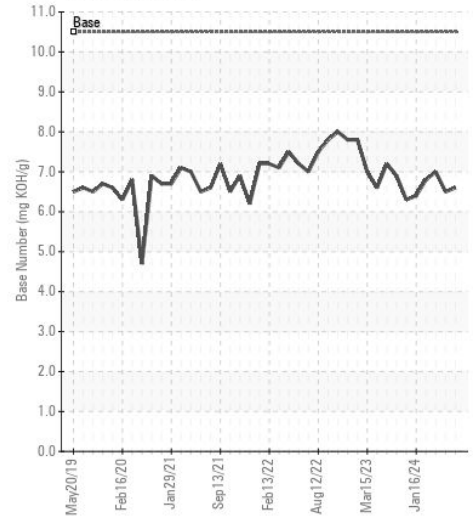
**Non-ferrous Metals**



**Viscosity @ 100°C**



**Base Number**



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : MW0069616  
**Lab Number** : 06191901  
**Unique Number** : 11048653  
**Test Package** : MAR 2

**Received** : 28 May 2024  
**Tested** : 29 May 2024  
**Diagnosed** : 30 May 2024 - Sean Felton

**AMERICAN COMMERCIAL LINES**  
 PO BOX 610, 1701 E. MARKET STREET  
 JEFFERSONVILLE, IN  
 US 47130

Contact: RONALD SCHNEIDER  
 ronald.schneider@bargeacbl.com

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)

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