



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>MW0069589</b>	MW0069616	MW0066378
Sample Date		Client Info		<b>16 Jun 2024</b>	18 May 2024	16 Apr 2024
Machine Age	hrs	Client Info		<b>4730</b>	4728	3990
Oil Age	hrs	Client Info		<b>4730</b>	4728	3990
Filter Age	hrs	Client Info		<b>79</b>	77	743
Oil Changed		Client Info		<b>Not Chngd</b>	N/A	Not Chngd
Filter Changed		Client Info		<b>Changed</b>	N/A	Changed
Sample Status				<b>NORMAL</b>	NORMAL	NORMAL

**WEAR**

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>75	<b>11</b>	13	13
Chromium	ppm	ASTM D5185m	>8	<b>&lt;1</b>	2	1
Nickel	ppm	ASTM D5185m	>2	<b>0</b>	<1	0
Titanium	ppm	ASTM D5185m	>3	<b>0</b>	<1	<1
Silver	ppm	ASTM D5185m	>2	<b>0</b>	1	0
Aluminum	ppm	ASTM D5185m	>15	<b>1</b>	2	2
Lead	ppm	ASTM D5185m	>18	<b>2</b>	3	3
Copper	ppm	ASTM D5185m	>80	<b>8</b>	10	11
Tin	ppm	ASTM D5185m	>14	<b>6</b>	8	8
Vanadium	ppm	ASTM D5185m		<b>0</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.

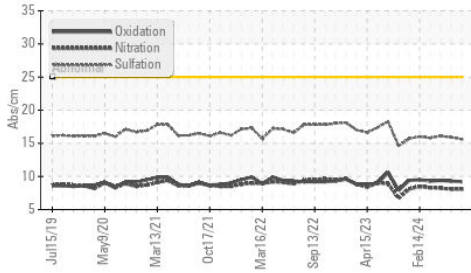
Silicon	ppm	ASTM D5185m	>20	<b>2</b>	4	3
Potassium	ppm	ASTM D5185m	>20	<b>28</b>	35	48
Fuel		WC Method	>4.0	<b>&lt;1.0</b>	<1.0	<1.0
Water		WC Method	>0.1	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	*ASTM D7844	>3	<b>0.2</b>	0.2	0.2
Nitration	Abs/cm	*ASTM D7624	>20	<b>8.1</b>	8.1	8.2
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>15.6</b>	15.9	16.1
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**

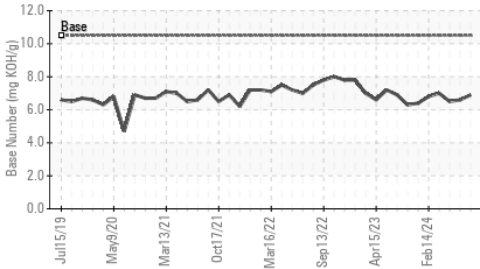
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m	>75	<b>5</b>	6	6
Boron	ppm	ASTM D5185m		<b>36</b>	41	41
Barium	ppm	ASTM D5185m		<b>0</b>	1	0
Molybdenum	ppm	ASTM D5185m		<b>46</b>	49	50
Manganese	ppm	ASTM D5185m		<b>0</b>	<1	0
Magnesium	ppm	ASTM D5185m		<b>15</b>	14	13
Calcium	ppm	ASTM D5185m		<b>3579</b>	3409	3373
Phosphorus	ppm	ASTM D5185m		<b>10</b>	19	15
Zinc	ppm	ASTM D5185m		<b>6</b>	11	7
Sulfur	ppm	ASTM D5185m		<b>2567</b>	2335	2392
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>9.2</b>	9.3	9.4
Base Number (BN)	mg KOH/g	ASTM D2896	10.5	<b>6.9</b>	6.6	6.5
Visc @ 100°C	cSt	ASTM D445	15.5	<b>14.6</b>	14.6	14.8

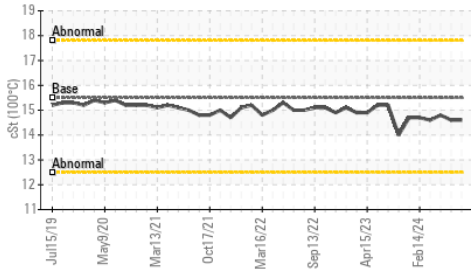
**FT-IR (Direct Trend)**



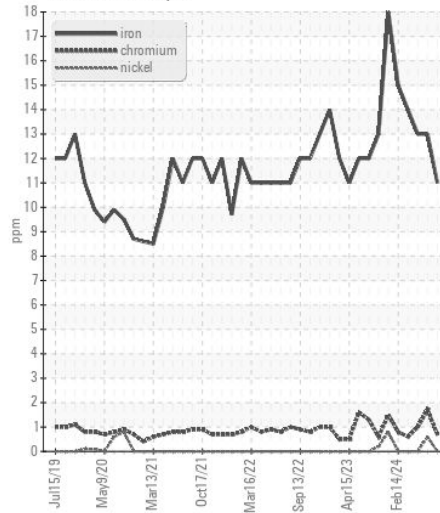
**Base Number**



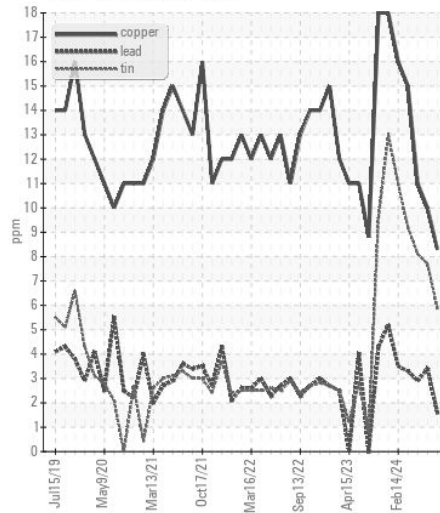
**Viscosity @ 100°C**



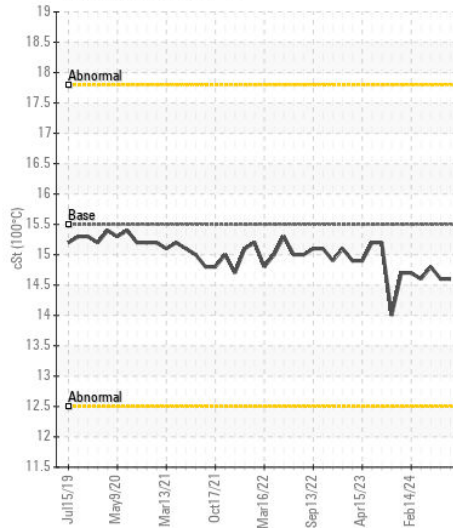
**Ferrous Alloys**



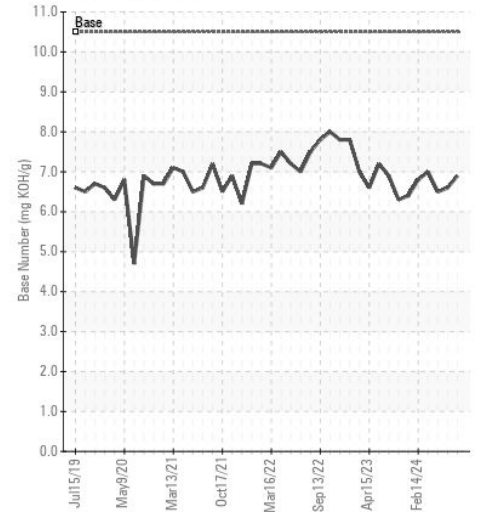
**Non-ferrous Metals**



**Viscosity @ 100°C**



**Base Number**



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : MW0069589  
**Lab Number** : 06231307  
**Unique Number** : 11114800  
**Test Package** : MAR 2

**Received** : 09 Jul 2024  
**Tested** : 10 Jul 2024  
**Diagnosed** : 10 Jul 2024 - Wes Davis

**AMERICAN COMMERCIAL LINES**  
 PO BOX 610, 1701 E. MARKET STREET  
 JEFFERSONVILLE, IN  
 US 47130  
 Contact: RONALD SCHNEIDER  
 ronald.schneider@bargaeacbl.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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