



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

Area  
**NDA**  
Machine Id  
Component  
**NDA**  
Starboard Main Engine  
Fluid  
**CHEVRON DELO 710 LS (300 GAL)**

**RECOMMENDATION**

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>MW0060743</b>	MW0065469	MW0060752
Sample Date		Client Info		<b>23 Jun 2024</b>	11 Mar 2024	22 Jan 2024
Machine Age	hrs	Client Info		<b>50588</b>	48281	47056
Oil Age	hrs	Client Info		<b>14520</b>	12163	2005
Filter Age	hrs	Client Info		<b>1251</b>	1227	1258
Oil Changed		Client Info		<b>N/A</b>	Not Changed	N/A
Filter Changed		Client Info		<b>Changed</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>	14	8
Chromium	ppm	ASTM D5185m	>8	<b>&lt;1</b>	1	<1
Nickel	ppm	ASTM D5185m	>2	<b>&lt;1</b>	<1	<1
Titanium	ppm	ASTM D5185m	>3	<b>&lt;1</b>	<1	0
Silver	ppm	ASTM D5185m	>2	<b>&lt;1</b>	0	0
Aluminum	ppm	ASTM D5185m	>15	<b>4</b>	2	2
Lead	ppm	ASTM D5185m	>18	<b>3</b>	4	3
Copper	ppm	ASTM D5185m	>80	<b>16</b>	14	8
Tin	ppm	ASTM D5185m	>14	<b>3</b>	3	2
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.

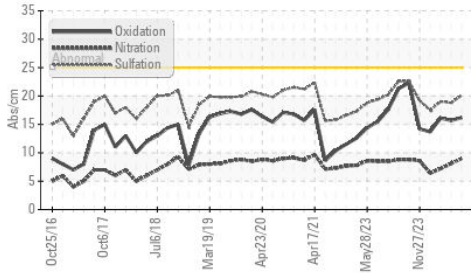
Silicon	ppm	ASTM D5185m	>20	<b>2</b>	4	2
Potassium	ppm	ASTM D5185m	>20	<b>2</b>	2	0
Fuel		WC Method	>4.0	<b>&lt;1.0</b>	<1.0	<1.0
Water		WC Method	>0.1	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	*ASTM D7844	>3	<b>0.8</b>	0.7	0.6
Nitration	Abs/cm	*ASTM D7624	>20	<b>9.0</b>	8.1	7.2
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>20.1</b>	18.8	19.0
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**

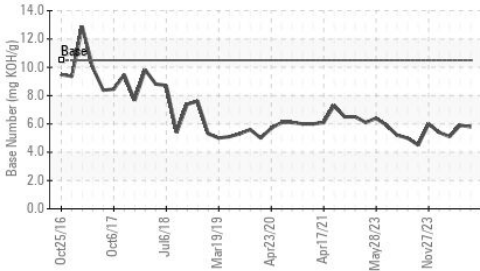
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m	>75	<b>0</b>	0	0
Boron	ppm	ASTM D5185m		<b>41</b>	39	41
Barium	ppm	ASTM D5185m		<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185m		<b>47</b>	44	40
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	<1	<1
Magnesium	ppm	ASTM D5185m		<b>9</b>	10	14
Calcium	ppm	ASTM D5185m		<b>3515</b>	3237	3109
Phosphorus	ppm	ASTM D5185m		<b>11</b>	6	2
Zinc	ppm	ASTM D5185m		<b>3</b>	3	0
Sulfur	ppm	ASTM D5185m		<b>2442</b>	2152	1949
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>16.2</b>	15.7	16.1
Base Number (BN)	mg KOH/g	ASTM D2896	10.5	<b>5.8</b>	5.9	5.1
Visc @ 100°C	cSt	ASTM D445	15.5	<b>13.7</b>	13.6	13.3

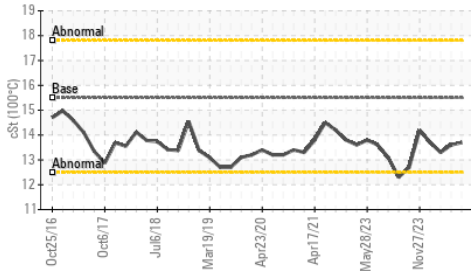
**FT-IR (Direct Trend)**



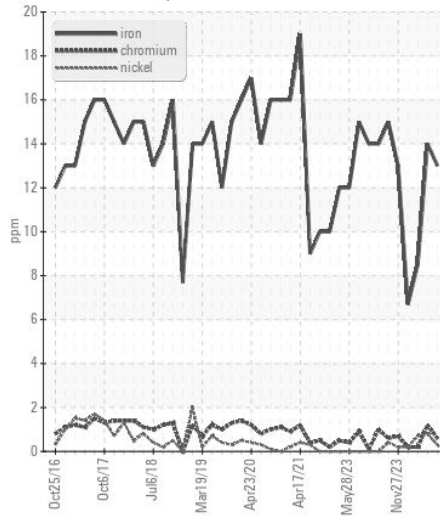
**Base Number**



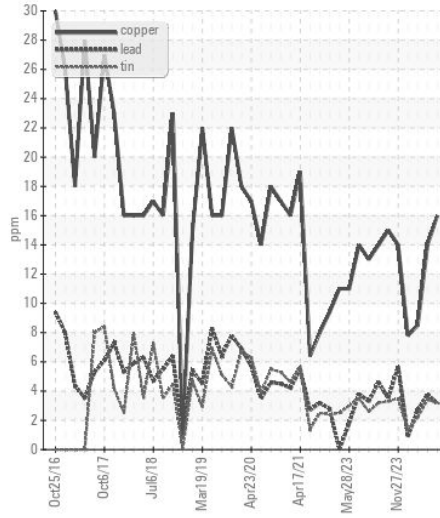
**Viscosity @ 100°C**



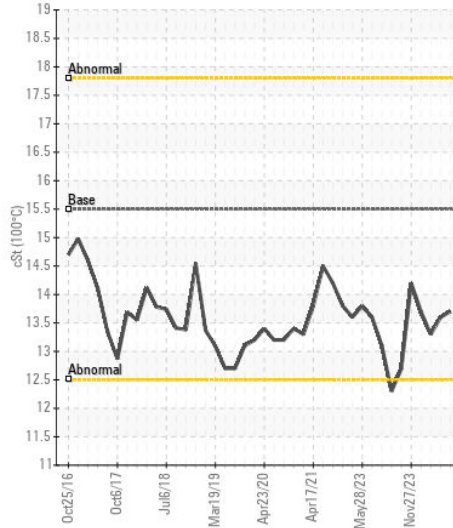
**Ferrous Alloys**



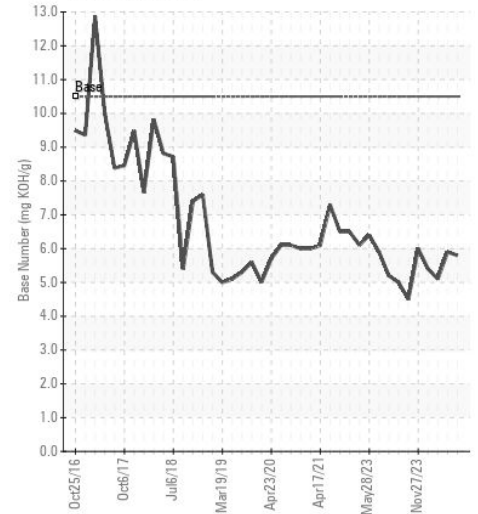
**Non-ferrous Metals**



**Viscosity @ 100°C**



**Base Number**



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : MW0060743  
**Lab Number** : 06239883  
**Unique Number** : 11128717  
**Test Package** : MAR 2

**Received** : 18 Jul 2024  
**Tested** : 18 Jul 2024  
**Diagnosed** : 18 Jul 2024 - Wes Davis

**AMERICAN RIVER TRANSPORTATION CO.**  
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 US 63111  
 Contact: BRIAN GRIEWING  
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 F: (314)481-5278

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)