



Machine Id  
**SUL**  
Component  
**Starboard Main Engine**  
Fluid  
**CHEVRON RPM HEAVY DUTY SAE 15W40 (--- GAL)**

**RECOMMENDATION**

We advise that you check for the source of the coolant leak. Check for low coolant level. We recommend an early resample to monitor this condition.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>MW0060675</b>	MW0060667	MW0031823
Sample Date		Client Info		<b>13 Jun 2024</b>	23 Feb 2024	05 Jun 2023
Machine Age	hrs	Client Info		<b>0</b>	0	0
Oil Age	hrs	Client Info		<b>0</b>	0	0
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**

The lead level is abnormal. Bearing and/or bushing wear is indicated.

Iron	ppm	ASTM D5185m	>75	<b>23</b>	12	21
Chromium	ppm	ASTM D5185m	>8	<b>1</b>	<1	1
Nickel	ppm	ASTM D5185m	>2	<b>&lt;1</b>	0	0
Titanium	ppm	ASTM D5185m	>3	<b>&lt;1</b>	0	<1
Silver	ppm	ASTM D5185m	>2	<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m	>15	<b>4</b>	4	<1
Lead	ppm	ASTM D5185m	>18	<b>▲ 51</b>	13	<b>▲ 46</b>
Copper	ppm	ASTM D5185m	>80	<b>5</b>	2	4
Tin	ppm	ASTM D5185m	>14	<b>2</b>	<1	1
Vanadium	ppm	ASTM D5185m		<b>&lt;1</b>	0	0
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE

**CONTAMINATION**

Sodium and/or potassium levels are high.

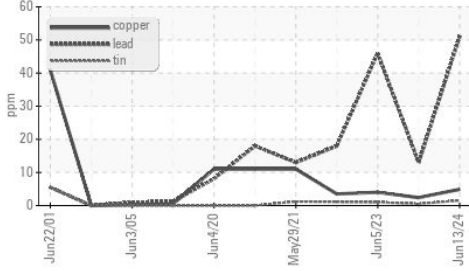
Silicon	ppm	ASTM D5185m	>20	<b>12</b>	8	7
Potassium	ppm	ASTM D5185m	>20	<b>▲ 117</b>	<b>▲ 56</b>	<b>▲ 54</b>
Fuel		WC Method	>4.0	<b>&lt;1.0</b>	<1.0	<1.0
Water		WC Method	>0.1	<b>NEG</b>	NEG	NEG
Glycol	%	*ASTM D2982		<b>NEG</b>	NEG	NEG
Soot %	%	*ASTM D7844		<b>1.1</b>	0.6	0.8
Nitration	Abs/cm	*ASTM D7624	>20	<b>10.2</b>	8.6	10.8
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>24.7</b>	24.0	24.5
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**

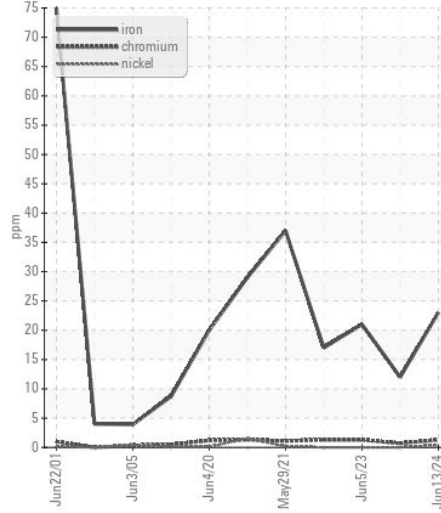
The BN result indicates that there is suitable alkalinity remaining in the oil.

Sodium	ppm	ASTM D5185m	>75	<b>▲ 577</b>	● 396	<b>▲ 387</b>
Boron	ppm	ASTM D5185m	0	<b>178</b>	● 289	129
Barium	ppm	ASTM D5185m	0	<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185m		<b>157</b>	● 142	121
Manganese	ppm	ASTM D5185m		<b>1</b>	<1	<1
Magnesium	ppm	ASTM D5185m		<b>710</b>	● 728	651
Calcium	ppm	ASTM D5185m		<b>1535</b>	1573	1560
Phosphorus	ppm	ASTM D5185m	1370	<b>701</b>	765	651
Zinc	ppm	ASTM D5185m	1480	<b>863</b>	889	838
Sulfur	ppm	ASTM D5185m		<b>2978</b>	● 2596	2954
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>19.0</b>	17.7	20.0
Base Number (BN)	mg KOH/g	ASTM D2896	11.6	<b>8.8</b>	9.2	8.4
Visc @ 100°C	cSt	ASTM D445	15.5	<b>13.1</b>	13.1	12.9

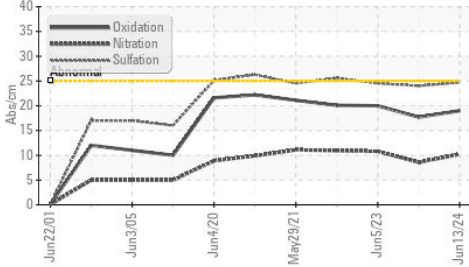
▲ Non-ferrous Metals



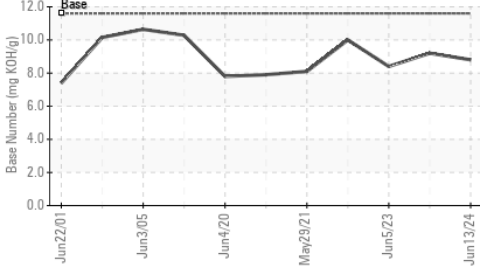
Ferrous Alloys



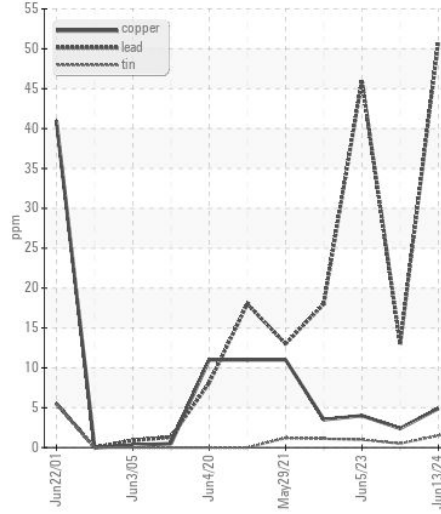
FT-IR (Direct Trend)



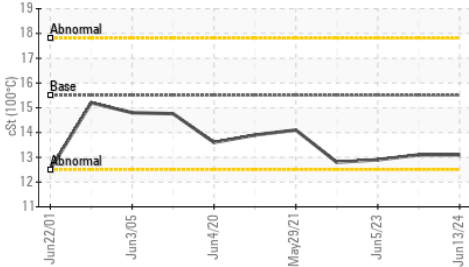
Base Number



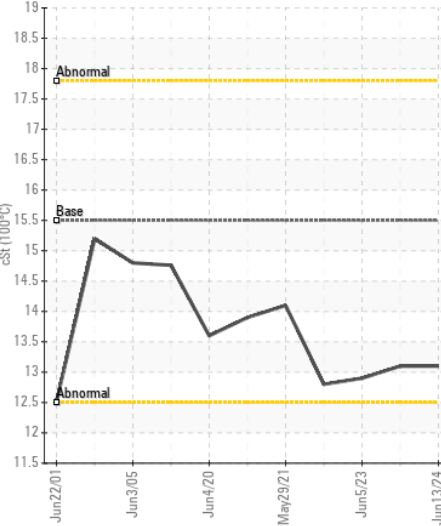
▲ Non-ferrous Metals



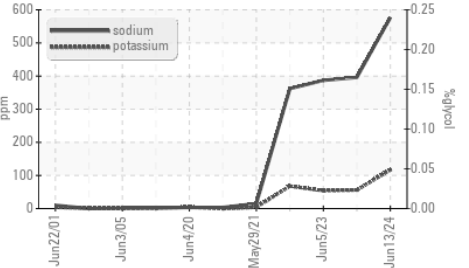
Viscosity @ 100°C



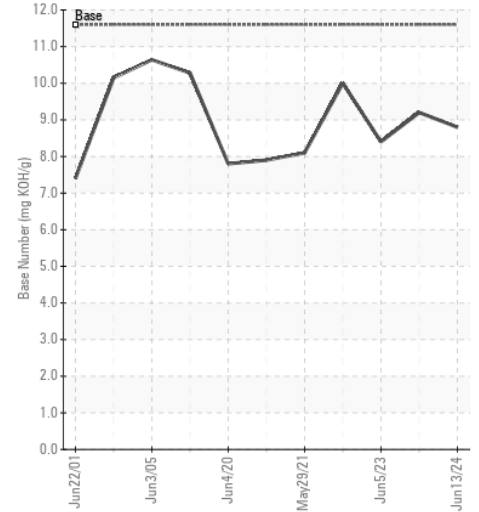
Viscosity @ 100°C



Glycol Contamination



Base Number



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : MW0060675  
**Lab Number** : 06217641  
**Unique Number** : 11090505  
**Test Package** : MAR 2 ( Additional Tests: Glycol )

**AMERICAN RIVER TRANSPORTATION CO.**  
 PO BOX 585  
 CASSVILLE, WI  
 US 53806  
 Contact: Dale Grimshaw  
 Dale.Grimshaw@adm.com  
 T: (608)725-2311  
 F:

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)