



## OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Area

### OCEAN NAVIGATOR

Machine Id

[OCEAN NAVIGATOR] OCEAN NAVIGATOR AUXENG SB

Component

Starboard Auxiliary Engine

Fluid

CASTROL TECTION EXTRA SAE 15W-40 (--- LTR)

### RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0824529	WC0633850	WC0667206
Sample Date		Client Info		24 Jul 2023	14 Apr 2023	01 Sep 2022
Machine Age	hrs	Client Info		0	2314	7841
Oil Age	hrs	Client Info		0	0	2732
Filter Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	Changed
Filter Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	NORMAL	ATTENTION

### WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	26	16	6
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	0	<1
Titanium	ppm	ASTM D5185m	>2	<1	<1	<1
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>20	2	<1	2
Lead	ppm	ASTM D5185m	>40	13	5	3
Copper	ppm	ASTM D5185m	>330	35	18	92
Tin	ppm	ASTM D5185m	>15	<1	<1	2
Vanadium	ppm	ASTM D5185m		<1	0	<1
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

### CONTAMINATION

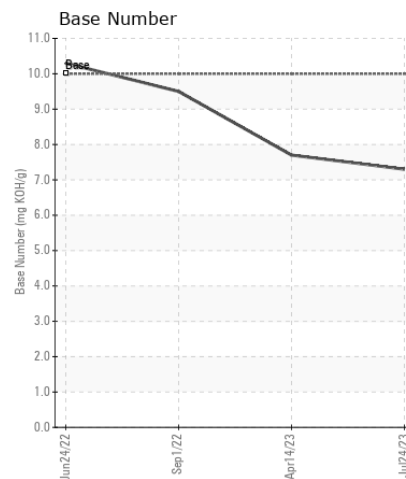
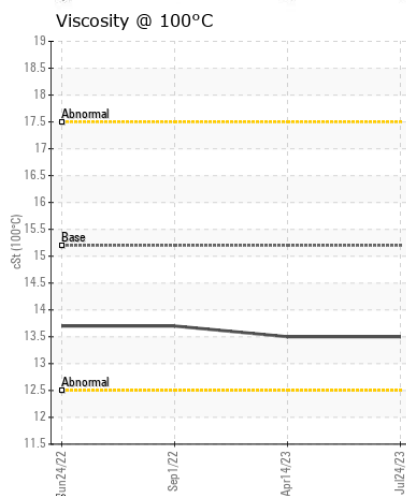
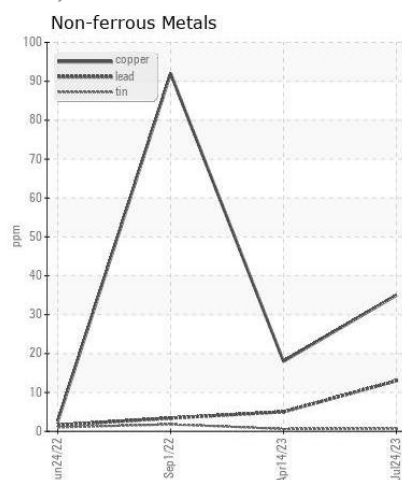
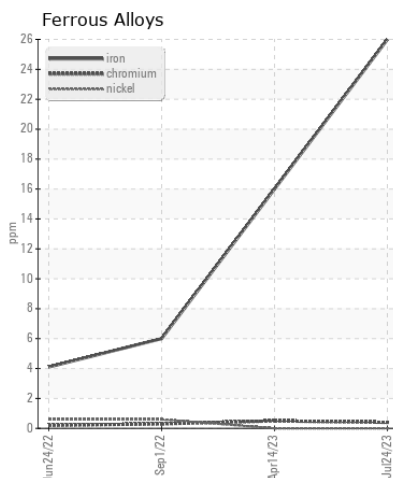
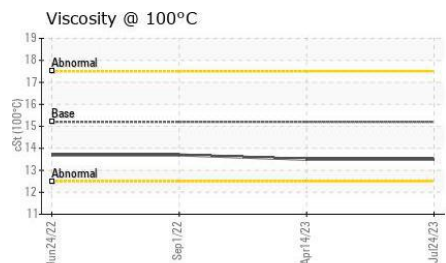
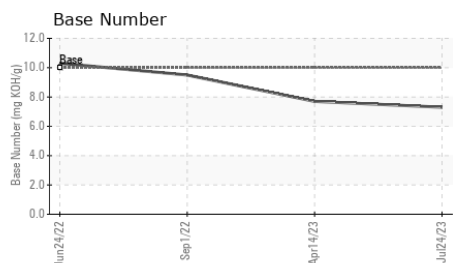
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>25	6	5	4
Potassium	ppm	ASTM D5185m	>20	2	3	3
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844		0.2	0.1	0.1
Nitration	Abs/cm	*ASTM D7624	>20	10.2	8.7	9.9
Sulfation	Abs/.1mm	*ASTM D7415	>30	23.4	21.5	24.9
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	LIGHT	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	NEG	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		68	2	<1
Boron	ppm	ASTM D5185m	30	24	39	88
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		12	4	8
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m	110	15	18	16
Calcium	ppm	ASTM D5185m	2740	3271	3576	3287
Phosphorus	ppm	ASTM D5185m	1240	963	967	885
Zinc	ppm	ASTM D5185m	1350	1202	1179	1121
Sulfur	ppm	ASTM D5185m	3520	4408	3706	3644
Oxidation	Abs/.1mm	*ASTM D7414	>25	17.6	16.7	18.6
Base Number (BN)	mg KOH/g	ASTM D2896	10.0	7.3	7.7	9.5
Visc @ 100°C	cSt	ASTM D445	15.2	13.5	13.5	13.7



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
 Sample No. : WC0824529  
 Lab Number : 05907050  
 Unique Number : 10573702  
 Test Package : MAR 2

Received : 25 Jul 2023  
 Diagnosed : 27 Jul 2023  
 Diagnostician : Sean Felton

American Queen Voyages - Oceans  
 1201 Bridgeport Drive  
 Jeffersonville, IN  
 US 47130  
 Contact: Dietrich Giles

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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