



WEAR  
CONTAMINATION  
FLUID CONDITION

**ATTENTION**  
**NORMAL**  
**NORMAL**

Area

**KILO CHARLIE**

Machine Id

**MAN KILO CHARLIE (S/N NOT GIVEN)**

Component

**Starboard Diesel Engine**

Fluid

**SHELL 15W40 (10 GAL)**

### RECOMMENDATION

The oil change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>VPA059715</b>	VPA031099	---
Sample Date		Client Info		<b>19 Jun 2024</b>	22 Aug 2022	---
Machine Age	hrs	Client Info		<b>0</b>	0	---
Oil Age	hrs	Client Info		<b>0</b>	200	---
Filter Age	hrs	Client Info		<b>0</b>	0	---
Oil Changed		Client Info		<b>Changed</b>	Changed	---
Filter Changed		Client Info		<b>N/A</b>	Changed	---
Sample Status				<b>ATTENTION</b>	ATTENTION	---

### WEAR

The copper level is abnormal. The chromium level is abnormal.

Iron	ppm	ASTM D5185m	>50	<b>47</b>	22	---
Chromium	ppm	ASTM D5185m	>10	<b>11</b>	6	---
Nickel	ppm	ASTM D5185m	>5	<b>6</b>	3	---
Titanium	ppm	ASTM D5185m	>2	<b>1</b>	<1	---
Silver	ppm	ASTM D5185m	>2	<b>0</b>	0	---
Aluminum	ppm	ASTM D5185m	>20	<b>7</b>	3	---
Lead	ppm	ASTM D5185m	>20	<b>1</b>	1	---
Copper	ppm	ASTM D5185m	>15	<b>36</b>	35	---
Tin	ppm	ASTM D5185m	>10	<b>0</b>	<1	---
Vanadium	ppm	ASTM D5185m		<b>&lt;1</b>	0	---
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	---
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	---

### CONTAMINATION

There is no indication of any contamination in the oil.

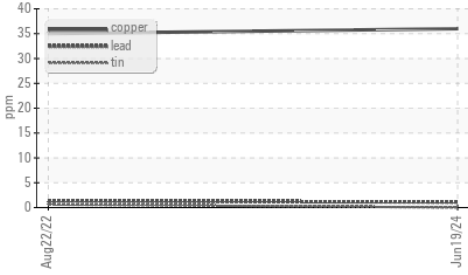
Silicon	ppm	ASTM D5185m	>20	<b>7</b>	7	---
Potassium	ppm	ASTM D5185m	>20	<b>4</b>	1	---
Fuel		WC Method	>4.0	<b>&lt;1.0</b>	<1.0	---
Water		WC Method	>0.1	<b>NEG</b>	NEG	---
Glycol	%	*ASTM D2982		<b>NEG</b>	0.0	---
Soot %	%	*ASTM D7844	>1.5	<b>0.3</b>	0.4	---
Nitration	Abs/cm	*ASTM D7624	>20	<b>7.2</b>	8.3	---
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>20.2</b>	21.5	---
Silt	scalar	*Visual	NONE	<b>NONE</b>	NONE	---
Debris	scalar	*Visual	NONE	<b>NONE</b>	NONE	---
Sand/Dirt	scalar	*Visual	NONE	<b>NONE</b>	NONE	---
Appearance	scalar	*Visual	NORML	<b>NORML</b>	NORML	---
Odor	scalar	*Visual	NORML	<b>NORML</b>	NORML	---
Emulsified Water	scalar	*Visual	>0.1	<b>NEG</b>	NEG	---

### FLUID CONDITION

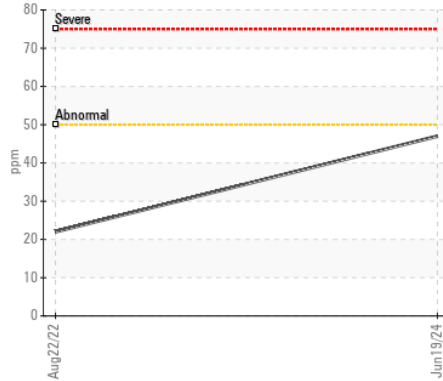
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

Sodium	ppm	ASTM D5185m	>150	<b>4</b>	3	---
Boron	ppm	ASTM D5185m		<b>116</b>	127	---
Barium	ppm	ASTM D5185m		<b>0</b>	0	---
Molybdenum	ppm	ASTM D5185m		<b>&lt;1</b>	8	---
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	<1	---
Magnesium	ppm	ASTM D5185m		<b>88</b>	93	---
Calcium	ppm	ASTM D5185m		<b>2347</b>	2094	---
Phosphorus	ppm	ASTM D5185m		<b>1029</b>	943	---
Zinc	ppm	ASTM D5185m		<b>1263</b>	1166	---
Sulfur	ppm	ASTM D5185m		<b>3981</b>	3188	---
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>15.8</b>	16.5	---
Base Number (BN)	mg KOH/g	ASTM D2896		<b>6.5</b>	8.9	---
Visc @ 100°C	cSt	ASTM D445		<b>15.6</b>	15.7	---

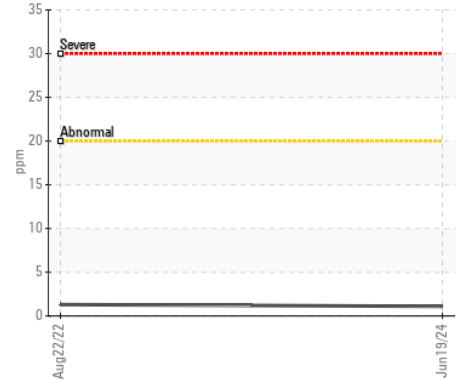
**Non-ferrous Metals**



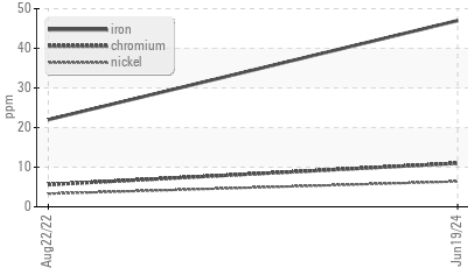
**Iron (ppm)**



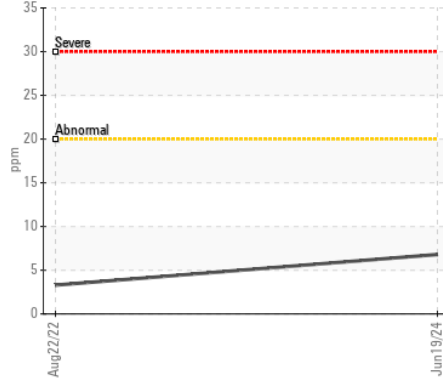
**Lead (ppm)**



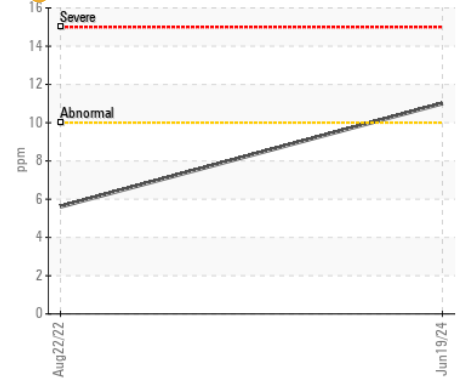
**Ferrous Alloys**



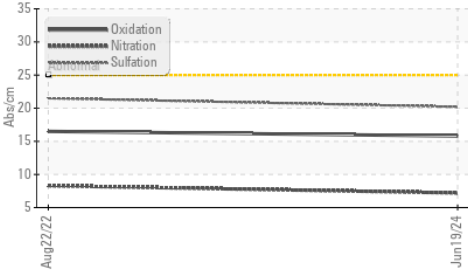
**Aluminum (ppm)**



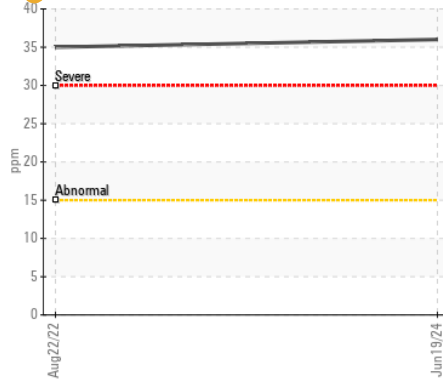
**Chromium (ppm)**



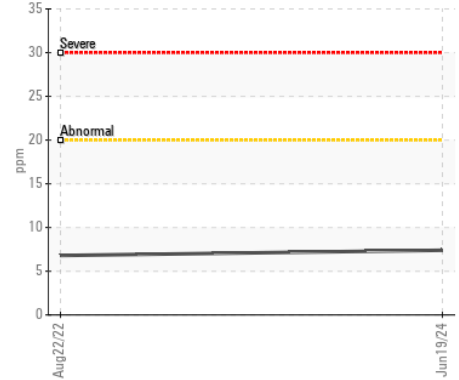
**FT-IR (Direct Trend)**



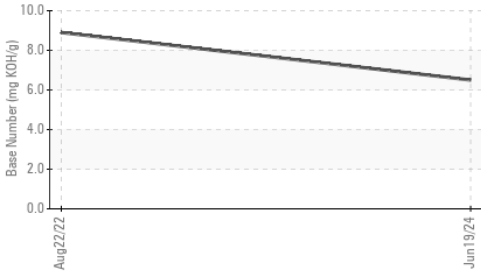
**Copper (ppm)**



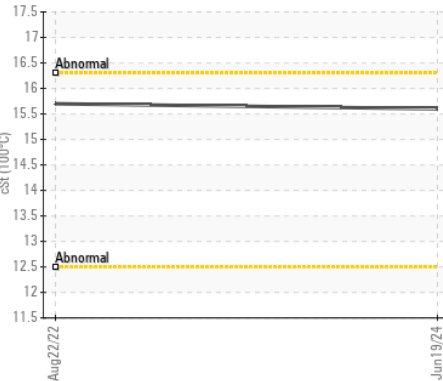
**Silicon (ppm)**



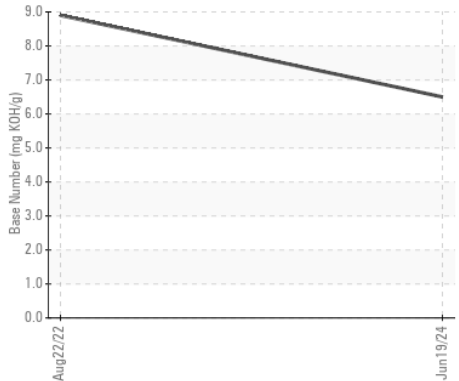
**Base Number**



**Viscosity @ 100°C**



**Base Number**



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513

**Sample No.** : VPA059715

**Lab Number** : 06215587

**Unique Number** : 11088451

**Test Package** : MOB 1 ( Additional Tests: Glycol, TBN )

**Received** : 20 Jun 2024

**Tested** : 22 Jun 2024

**Diagnosed** : 22 Jun 2024 - Don Baldrige

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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