



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Area
BRAD SPIEGEL [GEOFF/502071]

Machine Id
NORTHERN LIGHTS 8442-52021

Component
Starboard Genset

Fluid
VOLVO ULTRA DIESEL ENGINE OIL 15W40 VDS-3 (2 QTS)

RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		VPA056422	VPA042098	---
Sample Date		Client Info		14 Jun 2023	26 Sep 2022	---
Machine Age	hrs	Client Info		1348	2085	---
Oil Age	hrs	Client Info		0	25	---
Filter Age	hrs	Client Info		0	0	---
Oil Changed		Client Info		Not Changd	N/A	---
Filter Changed		Client Info		Not Changd	N/A	---
Sample Status				NORMAL	NORMAL	---

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>25	0	4	---
Chromium	ppm	ASTM D5185m	>5	<1	<1	---
Nickel	ppm	ASTM D5185m	>5	0	0	---
Titanium	ppm	ASTM D5185m		0	0	---
Silver	ppm	ASTM D5185m	>5	0	0	---
Aluminum	ppm	ASTM D5185m	>10	4	3	---
Lead	ppm	ASTM D5185m	>10	0	<1	---
Copper	ppm	ASTM D5185m	>20	2	<1	---
Tin	ppm	ASTM D5185m	>5	<1	0	---
Vanadium	ppm	ASTM D5185m		<1	0	---
White Metal	scalar	*Visual	NONE	NONE	NONE	---
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	---

CONTAMINATION

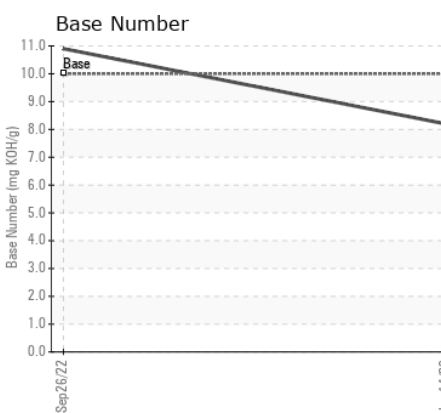
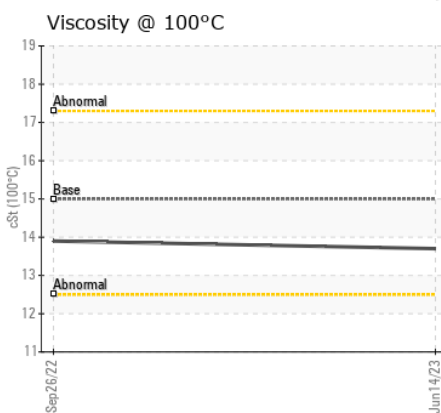
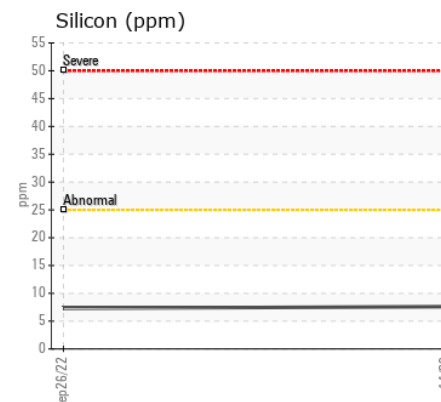
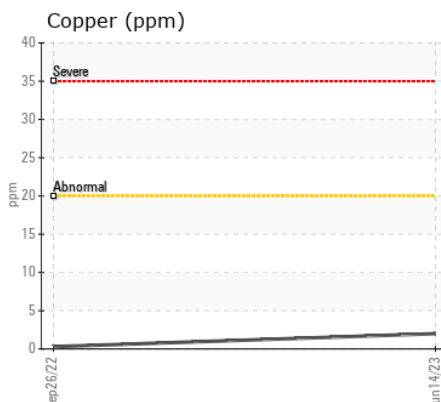
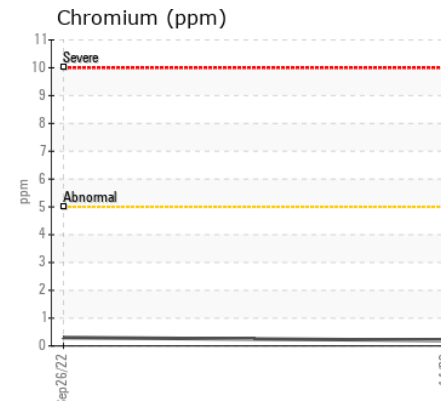
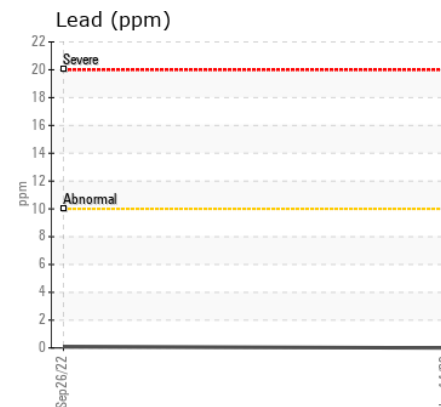
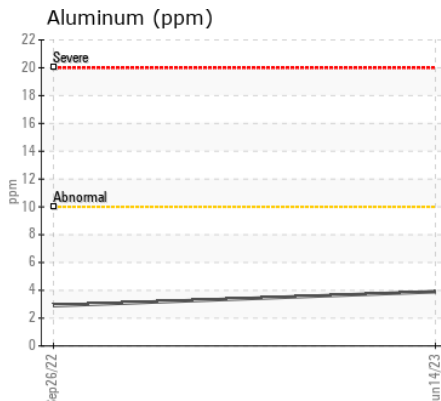
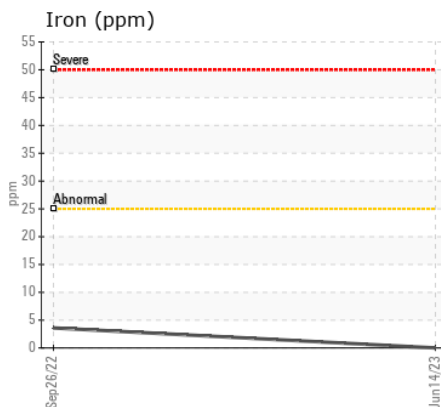
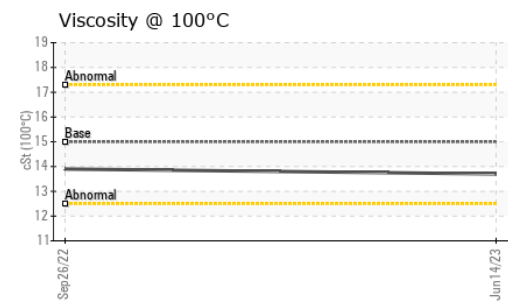
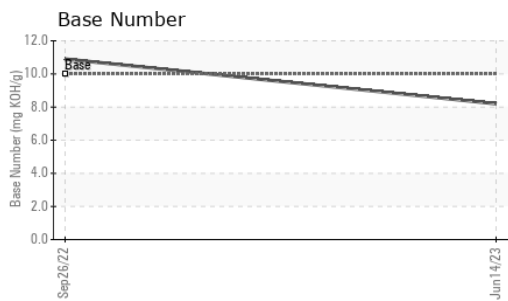
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>25	8	7	---
Potassium	ppm	ASTM D5185m	>20	3	2	---
Fuel		WC Method	>4.0	<1.0	<1.0	---
Glycol		WC Method		NEG	NEG	---
Soot %	%	*ASTM D7844		0.1	0.1	---
Nitration	Abs/cm	*ASTM D7624	>20	5.4	6.8	---
Sulfation	Abs/.1mm	*ASTM D7415	>30	22.5	23.0	---
Silt	scalar	*Visual	NONE	NONE	NONE	---
Debris	scalar	*Visual	NONE	NONE	NONE	---
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	---
Appearance	scalar	*Visual	NORML	NORML	NORML	---
Odor	scalar	*Visual	NORML	NORML	NORML	---
Emulsified Water	scalar	*Visual	>0.1	NEG	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		<1	0	---
Boron	ppm	ASTM D5185m	2.5	323	340	---
Barium	ppm	ASTM D5185m	0.0	0	0	---
Molybdenum	ppm	ASTM D5185m	0.7	109	113	---
Manganese	ppm	ASTM D5185m	0.0	1	<1	---
Magnesium	ppm	ASTM D5185m	256	689	601	---
Calcium	ppm	ASTM D5185m	2057	1572	1527	---
Phosphorus	ppm	ASTM D5185m	935	761	726	---
Zinc	ppm	ASTM D5185m	1223	948	872	---
Sulfur	ppm	ASTM D5185m	4079	3333	3069	---
Oxidation	Abs/.1mm	*ASTM D7414	>25	16.8	16.1	---
Base Number (BN)	mg KOH/g	ASTM D2896	10	8.2	10.9	---
Visc @ 100°C	cSt	ASTM D445	15.0	13.7	13.9	---



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : VPA056422 **Received** : 15 Jun 2023
Lab Number : 05874751 **Diagnosed** : 17 Jun 2023
Unique Number : 10519854 **Diagnostician** : Don Baldrige
Test Package : MOB 1 (Additional Tests: TBN)

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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)