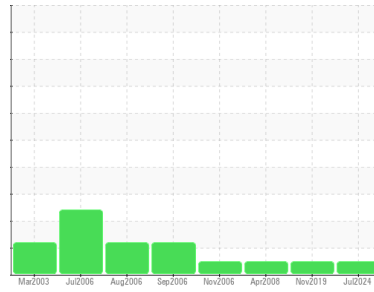




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Machine Id
500 YANMAR 35 CABO
 Component
Starboard Diesel Engine
 Fluid
SHELL ROTELLA T 15W40 (4 GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

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.

SAMPLE INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	WC0919938	WC0415755	WCMF109229
Sample Date	Client Info	08 Jul 2024	27 Nov 2019	25 Apr 2008
Machine Age	hrs	2100	1750	898
Oil Age	hrs	100	0	64
Oil Changed	Client Info	Changed	Changed	Not Changed
Sample Status		NORMAL	NORMAL	NORMAL

CONTAMINATION

method	limit/base	current	history1	history2
Fuel	WC Method >4.0	<1.0	<1.0	<1.0
Water	WC Method >0.1	NEG	NEG	NEG
Glycol	WC Method	NEG	NEG	NEG

WEAR METALS

method	limit/base	current	history1	history2
Iron	ppm ASTM D5185m >80	7	9	29
Chromium	ppm ASTM D5185m >6	0	<1	<1
Nickel	ppm ASTM D5185m >2	0	<1	<1
Titanium	ppm ASTM D5185m >2	0	<1	0
Silver	ppm ASTM D5185m >2	0	0	0
Aluminum	ppm ASTM D5185m >20	2	2	4
Lead	ppm ASTM D5185m >95	<1	10	4
Copper	ppm ASTM D5185m >85	<1	2	2
Tin	ppm ASTM D5185m >9	<1	0	<1
Antimony	ppm ASTM D5185m	---	0	0
Vanadium	ppm ASTM D5185m	0	0	0
Cadmium	ppm ASTM D5185m	0	0	0

ADDITIVES

method	limit/base	current	history1	history2
Boron	ppm ASTM D5185m 316	7	56	100
Barium	ppm ASTM D5185m 0.0	0	0	0
Molybdenum	ppm ASTM D5185m 1.2	56	53	82
Manganese	ppm ASTM D5185m	0	<1	<1
Magnesium	ppm ASTM D5185m 24	392	739	62
Calcium	ppm ASTM D5185m 2292	1743	1301	2705
Phosphorus	ppm ASTM D5185m 1064	1048	1032	1016
Zinc	ppm ASTM D5185m 1160	1247	1134	1241
Sulfur	ppm ASTM D5185m 4996	4127	2722	8112

CONTAMINANTS

method	limit/base	current	history1	history2
Silicon	ppm ASTM D5185m >25	3	4	0
Sodium	ppm ASTM D5185m	2	1	4
Potassium	ppm ASTM D5185m >20	<1	5	1

INFRA-RED

method	limit/base	current	history1	history2
Soot %	% *ASTM D7844	0.1	0.2	0.1
Nitration	Abs/cm *ASTM D7624 >20	6.2	6.9	6.
Sulfation	Abs/.1mm *ASTM D7415 >30	18.4	19.6	18.

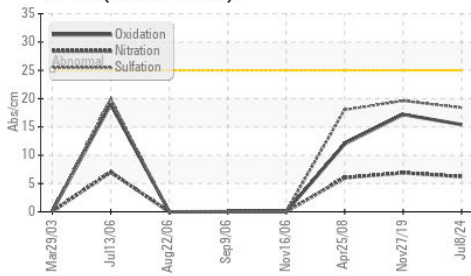
FLUID DEGRADATION

method	limit/base	current	history1	history2
Oxidation	Abs/.1mm *ASTM D7414 >25	15.4	17.2	12.
Base Number (BN)	mg KOH/g ASTM D2896 10.1	9.42	9.70	8.99

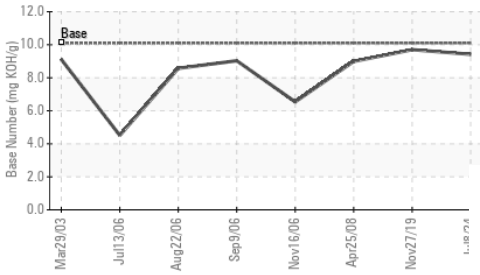


OIL ANALYSIS REPORT

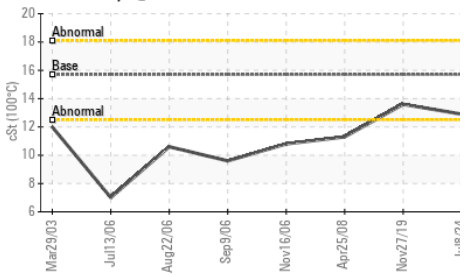
FT-IR (Direct Trend)



Base Number



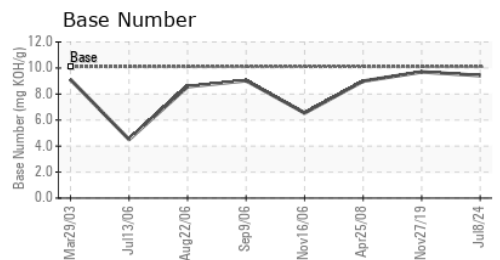
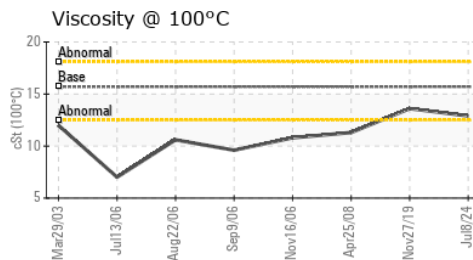
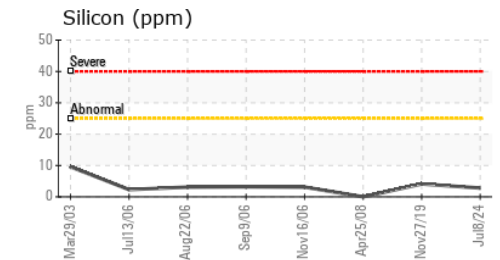
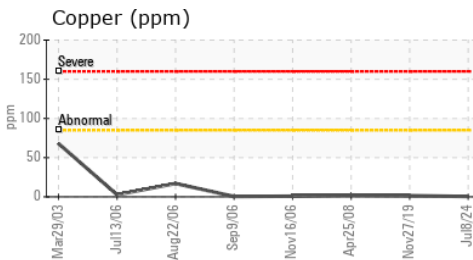
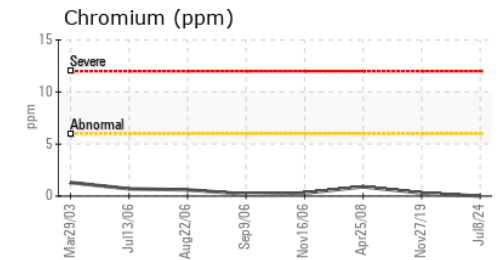
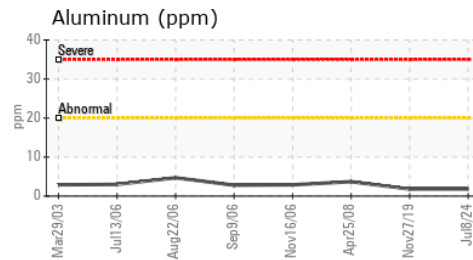
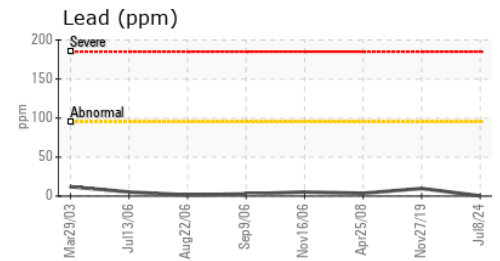
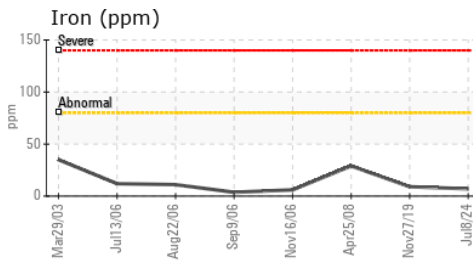
Viscosity @ 100°C



VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
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
Free Water	scalar	*Visual		NEG	NEG

FLUID PROPERTIES	method	limit/base	current	history1	history2	
Visc @ 100°C	cSt	ASTM D445	15.7	12.9	13.6	11.3

GRAPHS



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
 Sample No. : WC0919938
 Lab Number : 06235144
 Unique Number : 11123978
 Test Package : MOB 2
 Received : 12 Jul 2024
 Tested : 15 Jul 2024
 Diagnosed : 15 Jul 2024 - Wes Davis

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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)