

OIL ANALYSIS REPORT

VOLVO PENTA

ED MALONE YANMAR 4LHA-STP - ED MALONE (S/N NOT GIVEN) - STARBOARD DIESEL ENGINE

Sample No: VPA012782

Oil Type: SHELL ROTELLA T4 15W40

SAMPLE INFORMATION

Sample Number	VPA012782	VPA012774	VPA012888	VPA012202
Sample Date	27 Oct 2023	27 Nov 2021	21 Jun 2021	15 Aug 2020
Machine Hours	1135	1070	996	888
Oil Hours	65	75	108	100
Oil Changed	Changed	Changed	Changed	Changed
Sample Status	NORMAL	NORMAL	NORMAL	NORMAL

Lockwood Boat Works Inc

1825 Highway 35, Morgan

SOUTH AMBOY, NJ

US 08879

Contact: Ellen Lockwood

ellen@lockwoodboatworks.com;maryann@lockwoodboatworks.com

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OIL CONDITION

Visc @ 100°C	cSt	14.2	14.3	14.0	13.5
Base Number (BN)	mg KOH/g	8.7	8.9	---	---
Oxidation (PA)	%	74	73	80	64

CONTAMINATION

Soot %	%	0.2	0.2	0.2	0.2
Nitration (PA)	%	65	61	73	70
Sulfation (PA)	%	60	60	65	57
Glycol	%	NEG	NEG	NEG	NEG
Fuel	%	<1.0	<1.0	<1.0	<1.0
Silicon	ppm	3	2	2	4
Sodium	ppm	2	2	2	3
Potassium	ppm	8	8	8	9

WEAR METALS

Iron	ppm	7	9	14	9
Copper	ppm	4	4	5	5
Lead	ppm	3	2	2	<1
Tin	ppm	<1	<1	<1	0
Aluminum	ppm	1	1	0	2
Chromium	ppm	0	<1	<1	<1
Molybdenum	ppm	0	<1	2	8
Nickel	ppm	<1	0	0	0
Titanium	ppm	0	0	0	<1
Silver	ppm	0	<1	0	0
Manganese	ppm	<1	<1	<1	<1
Vanadium	ppm	0	0	0	0

ADDITIVES

Calcium	ppm	2079	2326	2281	1717
Magnesium	ppm	21	35	105	467
Zinc	ppm	1166	1167	1178	859
Phosphorus	ppm	969	1059	1005	810
Barium	ppm	0	0	0	<1
Boron	ppm	163	181	262	97

Diagnosis

Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. 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.

Depot: VP153187

Unique No: 10724517

Signed: Sean Felton

Report Date: 03 Nov 2023

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GRAPHS

