

# OIL ANALYSIS REPORT

**VOLVO  
PENTA**

## JOE WHITE CUMMINS 46011753 - STARBOARD DIESEL ENGINE

Sample No: VPA036961

Oil Type: VALVOLINE PREMIUM BLUE 2000 15W40

### SAMPLE INFORMATION

Sample Number	<b>VPA036961</b>	VPA040783	VPA035804	VPA031601
Sample Date	<b>20 Oct 2023</b>	25 Oct 2022	29 Oct 2021	02 Nov 2020
Machine Hours	<b>1021</b>	973	903	847
Oil Hours	<b>48</b>	67	56	36
Oil Changed	<b>Changed</b>	Changed	Changed	Changed
Sample Status	<b>NORMAL</b>	NORMAL	NORMAL	NORMAL

### Point Judith Marina

360 Gooseberry Road  
WAKEFIELD, RI  
US 02879

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### OIL CONDITION

Visc @ 100°C	cSt	<b>13.6</b>	14.0	14.1	14.1
Base Number (BN)	mg KOH/g	<b>8.8</b>	9.1	---	---
Oxidation (PA)	%	<b>76</b>	71	76	68

### CONTAMINATION

Water	%	<b>NEG</b>	NEG	NEG	NEG
Soot %	%	<b>0.2</b>	0.4	0.2	0.1
Nitration (PA)	%	<b>74</b>	89	73	62
Sulfation (PA)	%	<b>56</b>	61	58	56
Glycol	%	<b>NEG</b>	NEG	NEG	NEG
Fuel	%	<b>&lt;1.0</b>	<1.0	<1.0	<1.0
Silicon	ppm	<b>7</b>	6	7	5
Sodium	ppm	<b>2</b>	<1	3	2
Potassium	ppm	<b>2</b>	0	<1	<1

### WEAR METALS

Iron	ppm	<b>40</b>	22	18	21
Copper	ppm	<b>19</b>	16	14	7
Lead	ppm	<b>&lt;1</b>	<1	<1	0
Tin	ppm	<b>&lt;1</b>	<1	<1	<1
Aluminum	ppm	<b>2</b>	3	2	2
Chromium	ppm	<b>1</b>	1	1	<1
Molybdenum	ppm	<b>54</b>	46	51	45
Nickel	ppm	<b>2</b>	1	1	<1
Titanium	ppm	<b>&lt;1</b>	0	<1	<1
Silver	ppm	<b>&lt;1</b>	<1	<1	<1
Manganese	ppm	<b>&lt;1</b>	<1	<1	<1
Vanadium	ppm	<b>0</b>	0	0	0

### ADDITIVES

Calcium	ppm	<b>1234</b>	1285	1269	1533
Magnesium	ppm	<b>798</b>	750	739	542
Zinc	ppm	<b>910</b>	912	939	1204
Phosphorus	ppm	<b>696</b>	738	684	956
Barium	ppm	<b>10</b>	0	0	0
Boron	ppm	<b>39</b>	42	52	62

### 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: VP153811  
Unique No: 10819341  
Signed: Don Baldrige  
Report Date: 09 Jan 2024

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## GRAPHS

