

# OIL ANALYSIS REPORT



## ALASKA LUXURY TOURS OPUS-STBD VOLVO PENTA A1202077 - STARBOARD DIESEL ENGINE

**Sample No:** VPA060123  
**Oil Type:** KIRKLAND 15W40

### SAMPLE INFORMATION

Sample Number	<b>VPA060123</b>	VPA056349	VPA056366	VPA055295
Sample Date	<b>25 Aug 2023</b>	29 Jul 2023	02 Jul 2023	03 Jun 2023
Machine Hours	<b>787</b>	597	393	182
Oil Hours	<b>190</b>	200	211	182
Oil Changed	<b>Changed</b>	Changed	Changed	Changed
Sample Status	<b>NORMAL</b>	NORMAL	NORMAL	NORMAL

**Sundance Mfg Inc**  
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 Portland, OR  
 US 97217  
 Contact: CLARK HOLMES  
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 T:  
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### OIL CONDITION

Visc @ 100°C	cSt	<b>14.3</b>	14.4	14.2	14.1
Base Number (BN)	mg KOH/g	<b>10.1</b>	9.7	10.4	10.2
Oxidation (PA)	%	<b>55</b>	54	58	58

### CONTAMINATION

Soot %	%	<b>0.4</b>	0.4	0.4	0.2
Nitration (PA)	%	<b>50</b>	49	52	49
Sulfation (PA)	%	<b>52</b>	50	53	53
Glycol	%	<b>NEG</b>	NEG	NEG	NEG
Fuel	%	<b>&lt;1.0</b>	<1.0	<1.0	<1.0
Silicon	ppm	<b>3</b>	4	6	16
Sodium	ppm	<b>0</b>	2	1	3
Potassium	ppm	<b>&lt;1</b>	<1	3	4

### WEAR METALS

Iron	ppm	<b>16</b>	18	18	17
Copper	ppm	<b>7</b>	8	9	12
Lead	ppm	<b>2</b>	2	3	3
Tin	ppm	<b>1</b>	2	2	3
Aluminum	ppm	<b>&lt;1</b>	<1	4	4
Chromium	ppm	<b>&lt;1</b>	1	1	2
Molybdenum	ppm	<b>56</b>	61	58	58
Nickel	ppm	<b>3</b>	2	3	2
Titanium	ppm	<b>0</b>	<1	<1	0
Silver	ppm	<b>0</b>	0	0	0
Manganese	ppm	<b>&lt;1</b>	<1	<1	<1
Vanadium	ppm	<b>0</b>	<1	<1	0

### ADDITIVES

Calcium	ppm	<b>985</b>	1139	1100	1253
Magnesium	ppm	<b>868</b>	1016	945	939
Zinc	ppm	<b>1133</b>	1271	1241	1288
Phosphorus	ppm	<b>965</b>	1058	984	1043
Barium	ppm	<b>&lt;1</b>	0	0	0
Boron	ppm	<b>0</b>	2	<1	9

### 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:** VP154394  
**Unique No:** 10621768  
**Signed:** Don Baldrige  
**Report Date:** 29 Aug 2023

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**VOLVO  
PENTA**

## GRAPHS

