

OIL ANALYSIS REPORT



ALASKA LUXURY TOURS APEX-STBD VOLVO PENTA 2006040393 - STARBOARD DIESEL ENGINE

Sample No: VPA060120
Oil Type: KIRKLAND 15W40

SAMPLE INFORMATION

Sample Number	VPA060120	VPA036543	VPA056360	VPA055123
Sample Date	14 Sep 2023	07 Aug 2023	03 Jul 2023	05 Jun 2023
Machine Hours	2654	2440	2209	2008
Oil Hours	214	230	201	187
Oil Changed	Changed	Changed	Changed	Changed
Sample Status	NORMAL	NORMAL	NORMAL	NORMAL

Sundance Mfg Inc
 570 N.E. Tomahawk Isl. Dr.
 Portland, OR
 US 97217
 Contact: DAVID TAYLOR
 david@sundanceyachts.com
 T: (360)630-1495
 F:

OIL CONDITION

Visc @ 100°C	cSt	13.8	15.1	15.2	15.4
Base Number (BN)	mg KOH/g	9.3	9.0	9.7	9.4
Oxidation (PA)	%	80	77	84	88

CONTAMINATION

Soot %	%	0.4	0.4	0.4	0.3
Nitration (PA)	%	89	84	92	93
Sulfation (PA)	%	61	60	63	62
Glycol	%	NEG	NEG	NEG	NEG
Fuel	%	<1.0	<1.0	<1.0	<1.0
Silicon	ppm	4	3	2	3
Sodium	ppm	6	2	<1	1
Potassium	ppm	5	0	2	2

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.

WEAR METALS

Iron	ppm	9	8	10	11
Copper	ppm	5	10	9	10
Lead	ppm	<1	4	4	4
Tin	ppm	<1	<1	<1	<1
Aluminum	ppm	1	0	2	<1
Chromium	ppm	<1	<1	<1	<1
Molybdenum	ppm	30	64	60	62
Nickel	ppm	0	1	2	1
Titanium	ppm	15	<1	<1	0
Silver	ppm	0	0	0	0
Manganese	ppm	1	<1	<1	<1
Vanadium	ppm	<1	<1	<1	0

ADDITIVES

Calcium	ppm	1572	1193	1115	1150
Magnesium	ppm	794	1063	986	1023
Zinc	ppm	831	1383	1295	1296
Phosphorus	ppm	722	1121	1016	1025
Barium	ppm	0	0	0	0
Boron	ppm	91	<1	<1	2

Depot: VP154394
Unique No: 10670472
Signed: Don Baldrige
Report Date: 01 Oct 2023

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VOLVO PENTA

GRAPHS

