

OIL ANALYSIS REPORT



DAN KRAEMER 2006004801 - STARBOARD DIESEL ENGINE

Sample No: VPA051705
Oil Type: VOLVO VDS-4.5 Premium Motor Oil 15W40

SAMPLE INFORMATION

Sample Number	VPA051705	VPA038159	VPA031588	---
Sample Date	10 Sep 2023	18 Sep 2021	19 Sep 2020	---
Machine Hours	15	635	613	---
Oil Hours	15	33	40	---
Oil Changed	Changed	Changed	Changed	---
Sample Status	NORMAL	NORMAL	NORMAL	---

INTERSTATE POWER SYSTEMS

2901 E 78TH ST
 MINNEAPOLIS, MN
 US 55425
 Contact: BRADY GARBRECHT
 brady.garbrecht@istate.com
 T:
 F:

OIL CONDITION

Visc @ 100°C	cSt	14.0	14.2	13.2	---
Base Number (BN)	mg KOH/g	9.7	---	---	---
Oxidation (PA)	%	53	56	57	---

CONTAMINATION

Soot %	%	0.1	0.1	0.1	---
Nitration (PA)	%	41	48	53	---
Sulfation (PA)	%	50	52	52	---
Glycol	%	NEG	NEG	NEG	---
Fuel	%	<1.0	<1.0	<1.0	---
Silicon	ppm	6	5	4	---
Sodium	ppm	1	2	3	---
Potassium	ppm	2	5	11	---

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 suitable for further service.

WEAR METALS

Iron	ppm	3	3	4	---
Copper	ppm	<1	1	1	---
Lead	ppm	<1	0	4	---
Tin	ppm	<1	0	0	---
Aluminum	ppm	0	<1	1	---
Chromium	ppm	<1	<1	<1	---
Molybdenum	ppm	59	57	59	---
Nickel	ppm	<1	<1	<1	---
Titanium	ppm	0	0	<1	---
Silver	ppm	<1	0	0	---
Manganese	ppm	<1	<1	<1	---
Vanadium	ppm	0	0	0	---

ADDITIVES

Calcium	ppm	1098	1096	1028	---
Magnesium	ppm	988	1039	977	---
Zinc	ppm	1364	1159	1095	---
Phosphorus	ppm	1143	1044	1069	---
Barium	ppm	0	0	0	---
Boron	ppm	2	3	1	---

Depot: VP1103105
Unique No: 10646589
Signed: Jonathan Hester
Report Date: 18 Sep 2023

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GRAPHS

