

OIL ANALYSIS REPORT



VOLVO PENTA 1013544477 - STARBOARD DIESEL ENGINE

Sample No: VPA020819

Oil Type: CHEVRON DELO 400 LE 15W40

SAMPLE INFORMATION

Sample Number	VPA020819	VPA020810	VPA020025	VPA020421
Sample Date	31 Jan 2024	13 Nov 2023	22 Aug 2023	17 May 2023
Machine Hours	477	6465	6000	5489
Oil Hours	477	438	500	483
Oil Changed	Changed	Changed	Changed	Changed
Sample Status	ABNORMAL	ABNORMAL	ABNORMAL	ABNORMAL

CHARLESTON NAVIGATION
 6 CONCORD STREET
 CHARLESTON, SC
 US 29401
 Contact: David Matash
 dmatash@charlestonpilots.com
 T: (843)296-8344
 F: (843)577-0632

OIL CONDITION

Visc @ 100°C	cSt	▲ 12.1	▲ 11.5	▲ 11.7	▲ 11.5
Base Number (BN)	mg KOH/g	■ 6.1	■ 6.9	■ 5.6	■ 6.8
Oxidation (PA)	%	65	65	65	69

CONTAMINATION

Water	%	NEG	NEG	NEG	NEG
Soot %	%	■ 0.5	■ 0.6	■ 0.9	■ 0.6
Nitration (PA)	%	66	70	72	73
Sulfation (PA)	%	63	62	64	64
Glycol	%	NEG	NEG	NEG	NEG
Fuel	%	▲ 3.4	▲ 6.8	▲ 6.8	▲ 6.0
Silicon	ppm	■ 6	■ 5	■ 7	■ 8
Sodium	ppm	■ 0	■ 0	■ 2	■ 2
Potassium	ppm	■ 2	■ <1	■ 6	■ 16

WEAR METALS

Iron	ppm	■ 17	■ 12	■ 23	■ 18
Copper	ppm	■ 2	■ 1	■ 4	■ 3
Lead	ppm	■ 2	■ 3	■ 4	■ 4
Tin	ppm	■ <1	■ 1	■ 1	■ <1
Aluminum	ppm	■ 2	■ 4	■ 8	■ 8
Chromium	ppm	■ <1	■ <1	■ <1	■ <1
Molybdenum	ppm	■ 93	■ 94	■ 81	■ 113
Nickel	ppm	■ <1	■ <1	■ 0	■ <1
Titanium	ppm	■ <1	■ 0	■ 0	■ <1
Silver	ppm	■ 0	■ 0	■ 0	■ 0
Manganese	ppm	■ <1	■ <1	■ <1	■ <1
Vanadium	ppm	0	0	0	0

ADDITIVES

Calcium	ppm	■ 1235	■ 1369	■ 1298	■ 1340
Magnesium	ppm	■ 414	■ 518	410	■ 540
Zinc	ppm	■ 1206	■ 1065	■ 1168	■ 798
Phosphorus	ppm	■ 903	■ 876	■ 935	■ 650
Barium	ppm	■ 0	■ 0	■ 0	■ 0
Boron	ppm	■ 251	■ 166	■ 88	■ 134

Diagnosis

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor. All component wear rates are normal. Light fuel dilution occurring. No other contaminants were detected in the oil. Fuel is present in the oil and is lowering the viscosity. The BN result indicates that there is suitable alkalinity remaining in the oil.

Depot: VPCHACHA
Unique No: 10860864
Signed: Don Baldrige
Report Date: 06 Feb 2024

OIL ANALYSIS REPORT

VOLVO PENTA

GRAPHS

