



CONSTRUCTION EQUIPMENT

600188 WASTE MGMT VOLVO EC160E 310147 - DIESEL ENGINE



Sample No: VCP420784
Oil Type: VOLVO VDS-4.5 Premium Motor Oil 15W40
Job No: 600188 WASTE MGMT



SAMPLE INFORMATION

Sample Number	VCP420784	VCP434589	VCP379883	VCP346235
Sample Date	10 Jan 2024	21 Sep 2023	26 Apr 2023	31 Mar 2023
Machine Hours	12402	12010	9553	0
Oil Hours	392	0	0	0
Oil Changed	Changed	Changed	N/A	N/A
Sample Status	ATTENTION	ATTENTION	ABNORMAL	ABNORMAL

PACWEST MACHINERY
 8207 SOUTH 216TH STREET
 KENT, WA
 US 98032
 Contact: CHRIS COPELAND
 ccopeland@pacwestmachinery.com
 T: (800)935-5933
 F: (509)534-5286



OIL CONDITION

Visc @ 100°C	cSt	█ 13.7	█ 13.4	█ 13.0	█ 13.6
Base Number (BN)	mg KOH/g	█ 9.9	█ 10.3	█ 10.1	█ 7.2
Oxidation (PA)	%	85	88	76	50

Diagnosis

Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition. All component wear rates are normal. Sodium and/or potassium levels are high. Test for glycol is negative. 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.



CONTAMINATION

Water	%	NEG	NEG	NEG	NEG
Soot %	%	█ 0.3	█ 0.4	█ 0.2	█ 0.4
Nitration (PA)	%	73	77	60	75
Sulfation (PA)	%	65	65	59	57
Glycol	%	NEG	█ 0.0	NEG	NEG
Fuel	%	<1.0	<1.0	<1.0	<1.0
Silicon	ppm	█ 16	█ 16	█ 11	█ 19
Sodium	ppm	▲ 176	▲ 238	▲ 187	▲ 365
Potassium	ppm	█ 2	█ 2	█ 2	█ 6



WEAR METALS

Iron	ppm	█ 18	█ 15	█ 7	█ 13
Copper	ppm	█ 1	█ 2	█ 1	█ 2
Lead	ppm	█ 0	█ 0	█ <1	█ <1
Tin	ppm	█ <1	█ 1	█ <1	█ <1
Aluminum	ppm	█ 10	█ 7	█ <1	█ 7
Chromium	ppm	█ <1	█ <1	█ <1	█ <1
Molybdenum	ppm	█ 44	█ 43	█ 37	█ 14
Nickel	ppm	█ 0	█ <1	█ 0	█ <1
Titanium	ppm	0	0	<1	<1
Silver	ppm	█ 0	█ 0	█ 0	█ 0
Manganese	ppm	█ 0	█ <1	█ <1	█ <1
Vanadium	ppm	0	<1	<1	<1



ADDITIVES

Calcium	ppm	█ 1729	█ 1730	█ 1829	█ 2118
Magnesium	ppm	█ 596	█ 567	█ 488	█ 243
Zinc	ppm	█ 1198	█ 1197	█ 1161	█ 1158
Phosphorus	ppm	█ 980	█ 940	█ 936	█ 916
Barium	ppm	█ 0	█ 0	█ 0	█ 0
Boron	ppm	█ 31	█ 25	█ 27	█ 6

Depot: VOLVO1271
Unique No: 10861601
Signed: Jonathan Hester
Report Date: 07 Feb 2024



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GRAPHS

