Sample No: VCP442150

Oil Type: VOLVO ULTRA DIESEL ENGINE OIL 15W40 VDS-3

Job No: SW-26051-2 HOLCIM

SAMPLE INFORMATION

Sample Number		**VCP442150**	VCP400952	---	---
Sample Date		**09 Nov 2023**	04 May 2023	---	---
Machine Hours		**1756**	650	---	---
Oil Hours		**1100**	650	---	---
Oil Changed		**Changed**	Changed	---	---
Sample Status		**ABNORMAL**	ABNORMAL	---	---

OIL CONDITION

Visc @ 100°C	cSt	**12.7**	▲ 10.8	---	---
Base Number (BN)	mg KOH/g	**6.7**	6.3	---	---
Oxidation (PA)	%	**69**	61	---	---

CONTAMINATION

Water	%	**NEG**	NEG	---	---
Soot %	%	**0.3**	0.1	---	---
Nitration (PA)	%	**72**	79	---	---
Sulfation (PA)	%	**60**	53	---	---
Glycol	%	**NEG**	NEG	---	---
Fuel	%	**<1.0**	0.6	---	---
Silicon	ppm	**11**	29	---	---
Sodium	ppm	**<1**	4	---	---
Potassium	ppm	**0**	4	---	---

WEAR METALS

Iron	ppm	**15**	48	---	---
Copper	ppm	▲ **66**	▲ 450	---	---
Lead	ppm	**1**	6	---	---
Tin	ppm	**2**	2	---	---
Aluminum	ppm	**2**	5	---	---
Chromium	ppm	**<1**	0	---	---
Molybdenum	ppm	**63**	94	---	---
Nickel	ppm	**0**	<1	---	---
Titanium	ppm	**0**	0	---	---
Silver	ppm	**0**	0	---	---
Manganese	ppm	**<1**	2	---	---
Vanadium	ppm	**0**	0	---	---

ADDITIVES

Calcium	ppm	**1226**	2340	---	---
Magnesium	ppm	**876**	16	---	---
Zinc	ppm	**1221**	1311	---	---
Phosphorus	ppm	**896**	1099	---	---
Barium	ppm	**0**	0	---	---
Boron	ppm	**4**	51	---	---

ARNOLD MACHINERY COMPANY
2975 WEST 2100 SOUTH
SALT LAKE CITY, UT
US 84119
Contact: TJ LARK
tlark@arnoldmachinery.com
T: (801)972-4000
F: (801)975-9434

Diagnosis

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.The copper level has decreased, but is still abnormal. All other 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.

Depot:	VOLVO8770
Unique No:	10749766
Signed:	Don Baldridge
Report Date:	20 Nov 2023

GRAPHS

Iron (ppm)

- Severe: 400
- Abnormal: 200

Lead (ppm)

- Severe: 80
- Abnormal: 40

Aluminum (ppm)

- Severe: 60
- Abnormal: 30

Chromium (ppm)

- Severe: 40
- Abnormal: 20

⚠ Copper (ppm)

- Severe
- Abnormal

Silicon (ppm)

- Severe: 40
- Abnormal: 20

Viscosity @ 100°C

- Abnormal: 17.3
- Base: 15
- Abnormal: 12.5

Base Number

- Base: 10.0