



CONSTRUCTION EQUIPMENT

VOLVO L220ELR 314360 - COOLANT



Sample No: VCP0008472
Oil Type: VOLVO COOLANT VCS (YELLOW)
Job No:



SAMPLE INFORMATION

Sample Number	VCP0008472	VCP330356	---	---
Sample Date	27 Jun 2024	05 May 2022	---	---
Machine Hours	1360	1360	---	---
Sample Status	NORMAL	NORMAL	---	---

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COOLANT CONDITION

pH	Scale 0-14	7.83	8.16	---	---
Reserve Alkalinity	Scale 0-20	---	---	---	---
Nitrites	ppm	NT	NT	---	---
Percentage Glycol	%	45.6	45.3	---	---
Freezing Point	°C	-24	-24	---	---

Diagnosis

No corrective action is recommended at this time. The fluid is suitable for further service. There is no indication of any contamination in the coolant. Carboxylate test failed. The glycol level is acceptable. The pH level of this fluid is within the acceptable limits.



CONTAMINATION

Coolant Appearance	normal	normal	---	---
Coolant Color	Yllow	Yllow	---	---

Depot: VOLVO0092
Unique No: 11111532
Signed: Jonathan Hester
Report Date: 08 Jul 2024

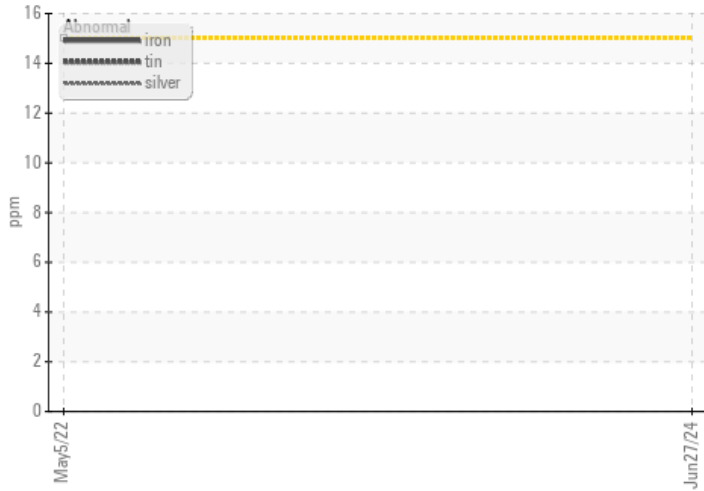


CONSTRUCTION EQUIPMENT

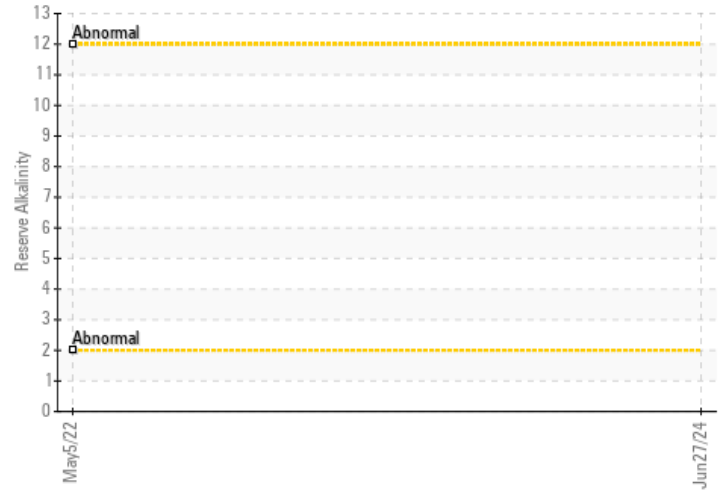


GRAPHS

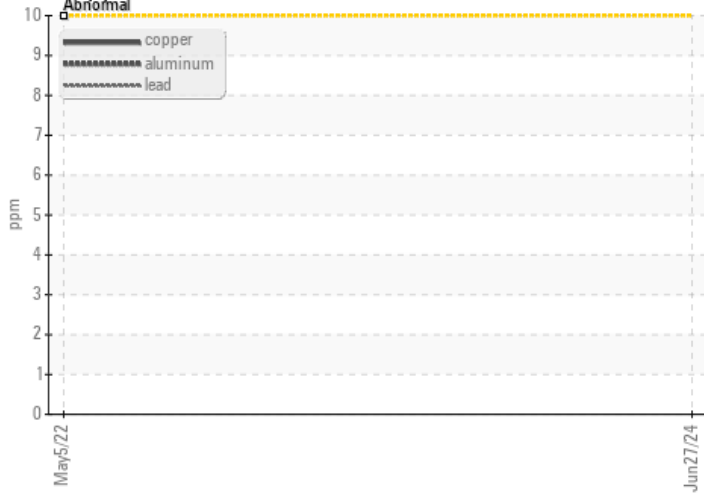
Iron/Tin/Silver



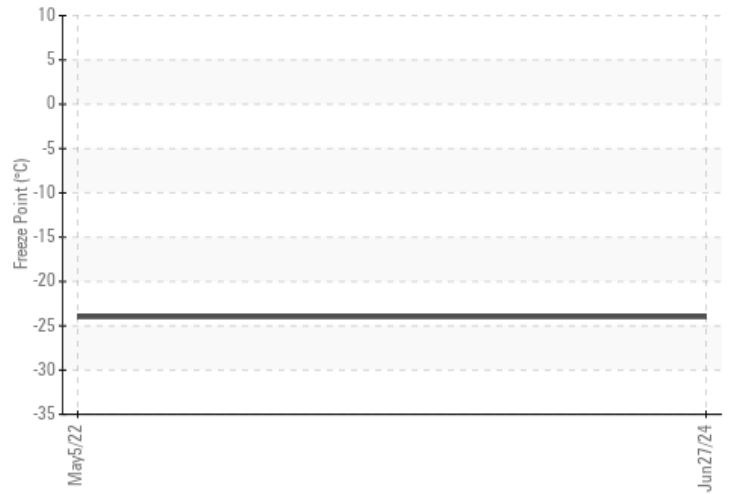
Reserve Alkalinity



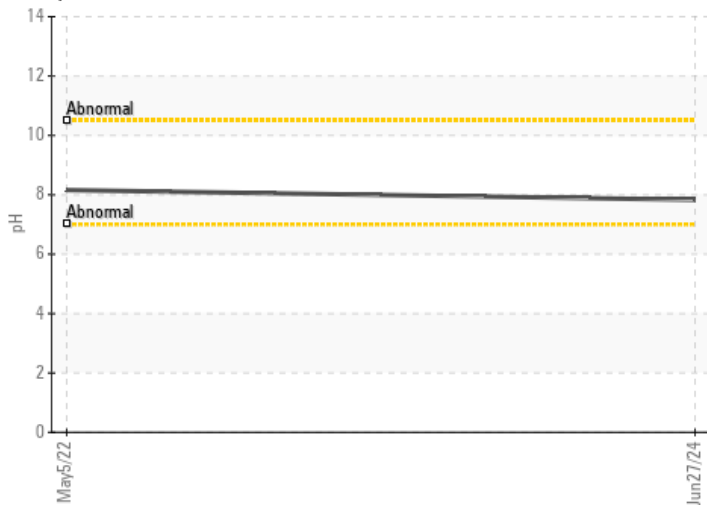
Copper/Aluminum/Lead



Freeze Point



pH



Nitrites





CONSTRUCTION EQUIPMENT

VOLVO L220ELR 314360 - DIESEL ENGINE



Sample No: VCP0008473
Oil Type: VOLVO ULTRA DIESEL ENGINE OIL 15W40 VDS-3
Job No:



SAMPLE INFORMATION

Sample Number	VCP0008473	VCP332963	---	---
Sample Date	27 Jun 2024	05 May 2022	---	---
Machine Hours	1360	1346	---	---
Oil Hours	14	500	---	---
Oil Changed	N/A	Changed	---	---
Sample Status	NORMAL	NORMAL	---	---

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OIL CONDITION

Visc @ 100°C	cSt	12.4	13.5	---	---
Base Number (BN)	mg KOH/g	10.4	10.3	---	---
Oxidation (PA)	%	71	82	---	---



CONTAMINATION

Water	%	NEG	NEG	---	---
Soot %	%	0.1	0.2	---	---
Nitration (PA)	%	42	77	---	---
Sulfation (PA)	%	57	63	---	---
Glycol	%	NEG	NEG	---	---
Fuel	%	<1.0	<1.0	---	---
Silicon	ppm	10	7	---	---
Sodium	ppm	2	2	---	---
Potassium	ppm	1	2	---	---



WEAR METALS

Iron	ppm	10	18	---	---
Copper	ppm	<1	2	---	---
Lead	ppm	0	2	---	---
Tin	ppm	0	1	---	---
Aluminum	ppm	2	3	---	---
Chromium	ppm	<1	1	---	---
Molybdenum	ppm	43	31	---	---
Nickel	ppm	0	<1	---	---
Titanium	ppm	0	21	---	---
Silver	ppm	0	0	---	---
Manganese	ppm	0	<1	---	---
Vanadium	ppm	0	<1	---	---



ADDITIVES

Calcium	ppm	1506	1890	---	---
Magnesium	ppm	459	477	---	---
Zinc	ppm	1052	1266	---	---
Phosphorus	ppm	888	1035	---	---
Barium	ppm	0	0	---	---
Boron	ppm	75	53	---	---

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.

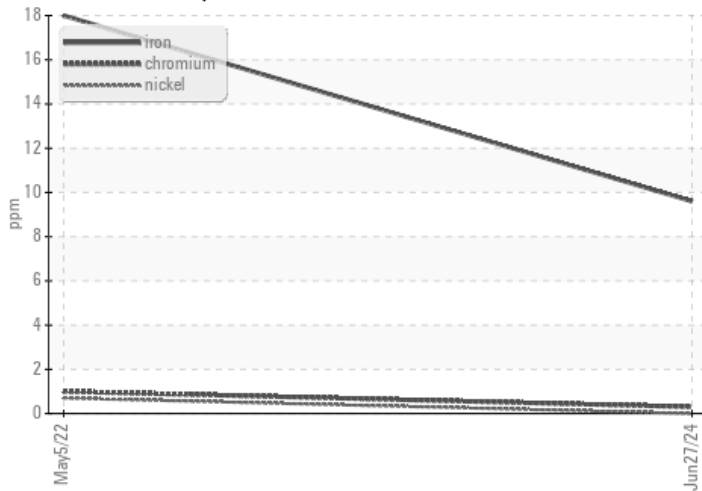


CONSTRUCTION EQUIPMENT

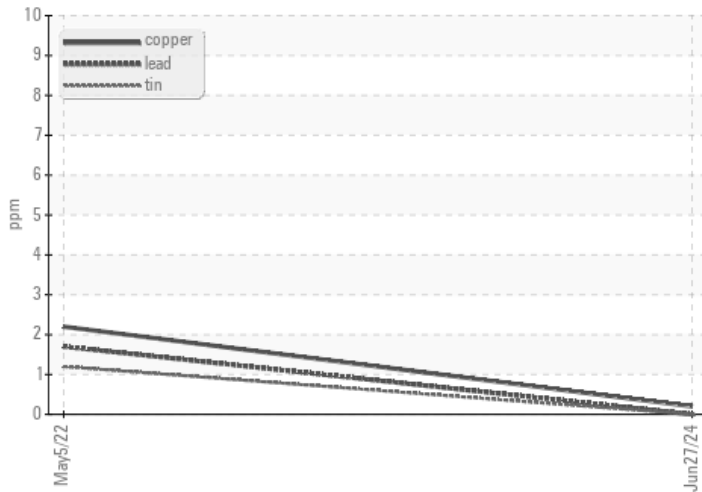


GRAPHS

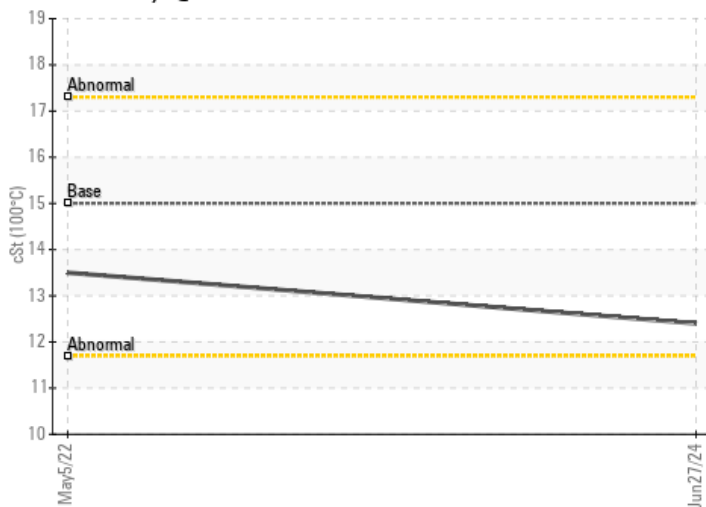
Ferrous Alloys



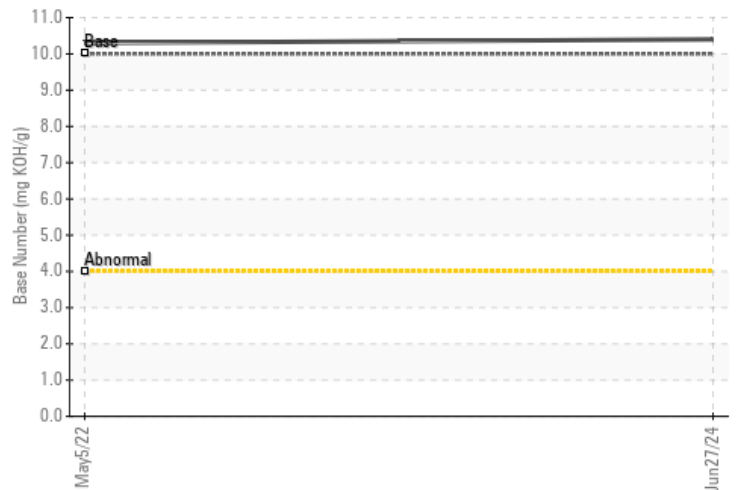
Non-ferrous Metals



Viscosity @ 100°C



Base Number





CONSTRUCTION EQUIPMENT

VOLVO L220ELR 314360 - HYDRAULIC SYSTEM



Sample No: VCP0008474
Oil Type: VOLVO SUPER HYDRAULIC OIL 46
Job No:



SAMPLE INFORMATION

Sample Number	VCP0008474	VCP330342	---	---
Sample Date	27 Jun 2024	05 May 2022	---	---
Machine Hours	1360	1346	---	---
Oil Hours	1360	1000	---	---
Oil Changed	N/A	Not Changd	---	---
Sample Status	ATTENTION	ABNORMAL	---	---

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OIL CONDITION

Visc @ 40°C	cSt	47.5	43.8	---	---
Acid Number (AN)	mg KOH/g	0.61	0.59	---	---



CONTAMINATION

Water	%	NEG	0.173	---	---
Particles >4µm		5144	---	---	---
Particles >6µm		1649	---	---	---
Particles >14µm		129	---	---	---
ISO 4406:1999 (c)		20/18/14	---	---	---
Silicon	ppm	3	3	---	---
Sodium	ppm	2	2	---	---
Potassium	ppm	<1	1	---	---

Diagnosis

We recommend you service the filters on this component. Resample at the next service interval to monitor. All component wear rates are normal. There is a light amount of silt (particulates < 14 microns in size) present in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.



WEAR METALS

Iron	ppm	2	2	---	---
Copper	ppm	47	39	---	---
Lead	ppm	0	<1	---	---
Tin	ppm	0	<1	---	---
Aluminum	ppm	0	0	---	---
Chromium	ppm	0	0	---	---
Molybdenum	ppm	0	0	---	---
Nickel	ppm	0	0	---	---
Titanium	ppm	0	0	---	---
Silver	ppm	0	0	---	---
Manganese	ppm	0	0	---	---
Vanadium	ppm	0	0	---	---



ADDITIVES

Calcium	ppm	110	129	---	---
Magnesium	ppm	<1	<1	---	---
Zinc	ppm	671	729	---	---
Phosphorus	ppm	543	540	---	---
Barium	ppm	0	0	---	---
Boron	ppm	0	4	---	---

Depot: VOLVO0092
Unique No: 11110831
Signed: Wes Davis
Report Date: 05 Jul 2024

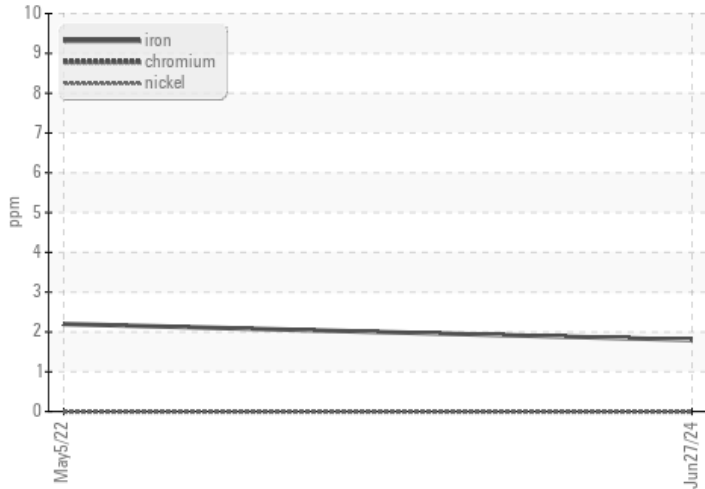


CONSTRUCTION EQUIPMENT

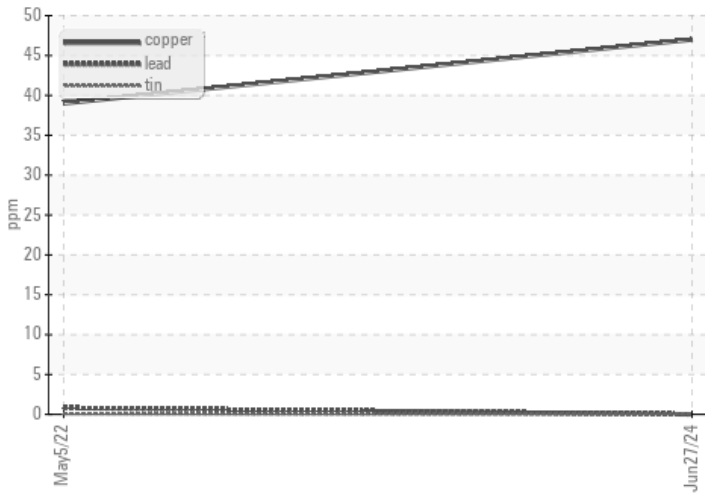


GRAPHS

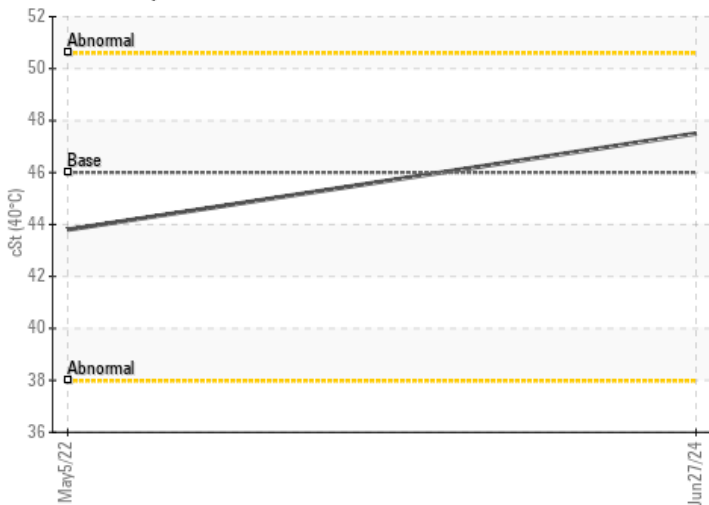
Ferrous Alloys



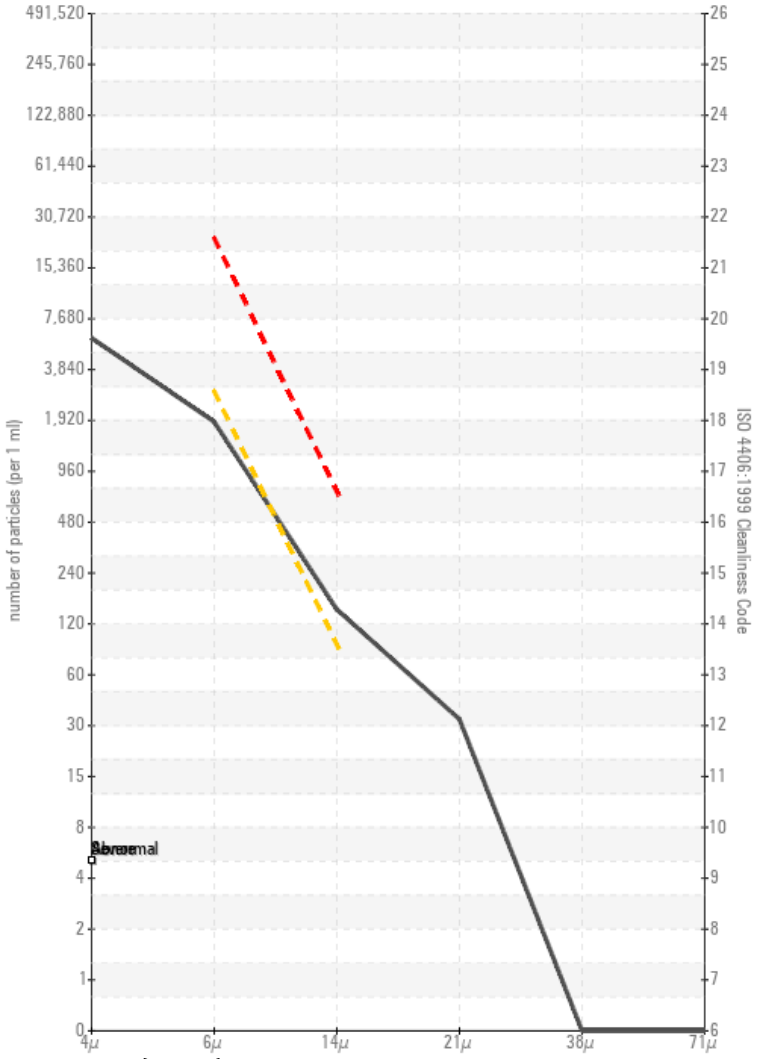
Non-ferrous Metals



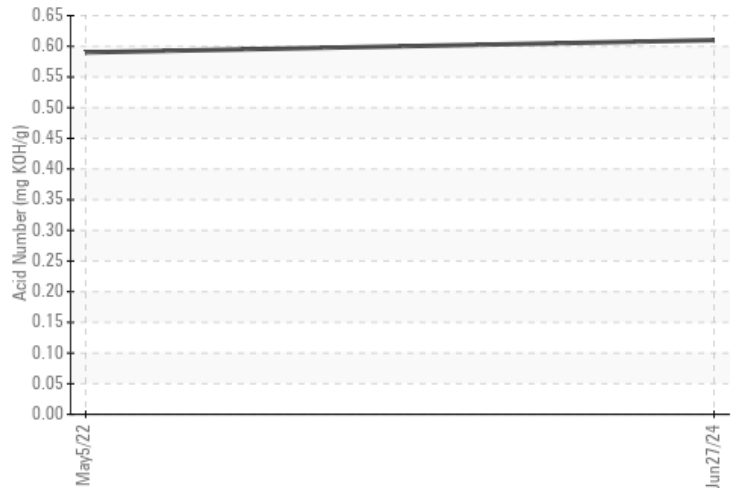
Viscosity @ 40°C



Particle Count



Acid Number





CONSTRUCTION EQUIPMENT

VOLVO L220ELR 314360 - SWING DRIVE



Sample No: VCP0008475
Oil Type: VOLVO PREMIUM GEAR OIL 85W-140 GL-5
Job No:



SAMPLE INFORMATION

Sample Number	VCP0008475	VCP332966	---	---
Sample Date	27 Jun 2024	05 May 2022	---	---
Machine Hours	1360	1346	---	---
Oil Hours	14	1000	---	---
Oil Changed	N/A	Changed	---	---
Sample Status	NORMAL	NORMAL	---	---

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OIL CONDITION

Visc @ 40°C	cSt	340	165	---	---
-------------	-----	------------	-----	-----	-----



CONTAMINATION

Water	%	NEG	NEG	---	---
Silicon	ppm	6	10	---	---
Sodium	ppm	<1	1	---	---
Potassium	ppm	<1	0	---	---

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 condition of the oil is acceptable for the time in service.



WEAR METALS

Iron	ppm	395	314	---	---
Copper	ppm	9	6	---	---
Lead	ppm	0	0	---	---
Tin	ppm	0	0	---	---
Aluminum	ppm	<1	1	---	---
Chromium	ppm	4	3	---	---
Molybdenum	ppm	<1	1	---	---
Nickel	ppm	0	0	---	---
Titanium	ppm	<1	0	---	---
Silver	ppm	0	0	---	---
Manganese	ppm	4	5	---	---
Vanadium	ppm	0	0	---	---



ADDITIVES

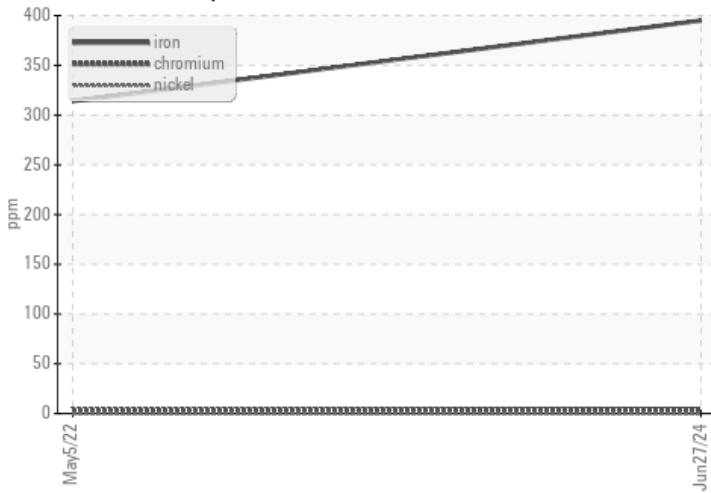
Calcium	ppm	12	13	---	---
Magnesium	ppm	<1	0	---	---
Zinc	ppm	8	9	---	---
Phosphorus	ppm	1062	297	---	---
Barium	ppm	2	0	---	---
Boron	ppm	158	0	---	---

Depot: VOLVO0092
Unique No: 11111460
Signed: Don Baldrige
Report Date: 07 Jul 2024

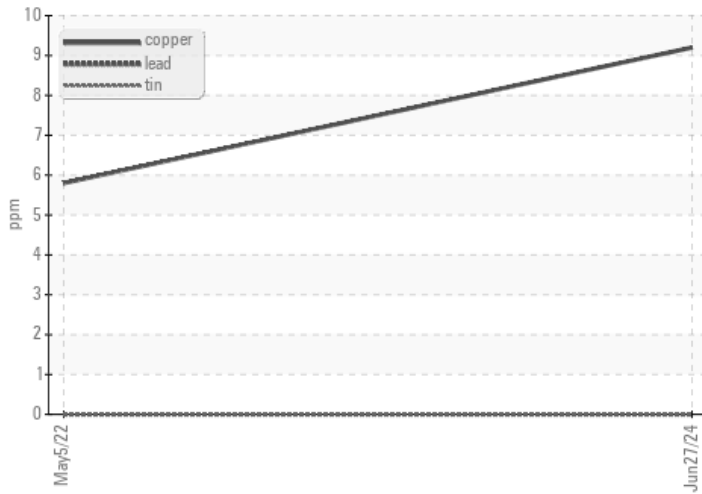


GRAPHS

Ferrous Alloys



Non-ferrous Metals



Viscosity @ 40°C





CONSTRUCTION EQUIPMENT

VOLVO L220ELR 314360 - LEFT FINAL DRIVE



Sample No: VCP0008476

Oil Type: {unknown}

Job No:



SAMPLE INFORMATION

Sample Number	VCP0008476	---	---	---
Sample Date	27 Jun 2024	---	---	---
Machine Hours	1360	---	---	---
Oil Hours	1360	---	---	---
Oil Changed	N/A	---	---	---
Sample Status	ABNORMAL	---	---	---

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OIL CONDITION

Visc @ 40°C	cSt	■ 303	---	---	---
-------------	-----	-------	-----	-----	-----



CONTAMINATION

Water	%	■ 0.089	---	---	---
Silicon	ppm	▲ 264	---	---	---
Sodium	ppm	■ 7	---	---	---
Potassium	ppm	■ 20	---	---	---



WEAR METALS

Iron	ppm	▲ 1457	---	---	---
Copper	ppm	■ <1	---	---	---
Lead	ppm	■ 0	---	---	---
Tin	ppm	■ 0	---	---	---
Aluminum	ppm	● 42	---	---	---
Chromium	ppm	▲ 14	---	---	---
Molybdenum	ppm	1	---	---	---
Nickel	ppm	■ 5	---	---	---
Titanium	ppm	3	---	---	---
Silver	ppm	0	---	---	---
Manganese	ppm	16	---	---	---
Vanadium	ppm	0	---	---	---



ADDITIVES

Calcium	ppm	72	---	---	---
Magnesium	ppm	5	---	---	---
Zinc	ppm	22	---	---	---
Phosphorus	ppm	955	---	---	---
Barium	ppm	3	---	---	---
Boron	ppm	78	---	---	---

Diagnosis

We advise that you check all areas where dirt can enter the system. Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample. Gear wear is indicated. All other metal levels are typical for a new component breaking in. Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress. The condition of the oil is acceptable for the time in service.

Depot: VOLVO0092
Unique No: 11111463
Signed: Don Baldrige
Report Date: 07 Jul 2024

Submitted By: TECHNICIAN ACCOUNT

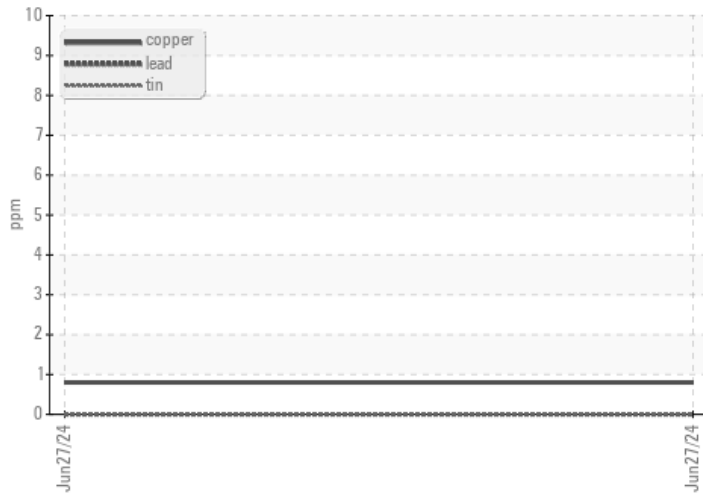


GRAPHS

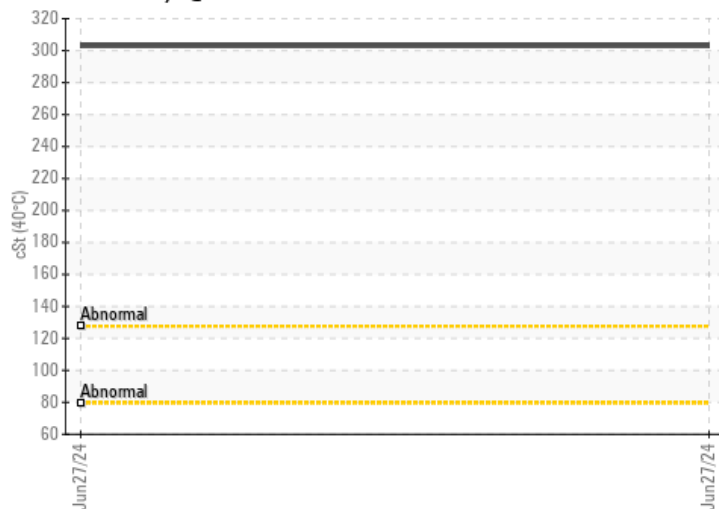
▲ Ferrous Alloys



Non-ferrous Metals



Viscosity @ 40°C





CONSTRUCTION EQUIPMENT

VOLVO L220ELR 314360 - RIGHT FINAL DRIVE



Sample No: VCP0008477

Oil Type: {unknown}

Job No:



SAMPLE INFORMATION

Sample Number	VCP0008477	---	---	---
Sample Date	27 Jun 2024	---	---	---
Machine Hours	1360	---	---	---
Oil Hours	1360	---	---	---
Oil Changed	N/A	---	---	---
Sample Status	SEVERE	---	---	---

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OIL CONDITION

Visc @ 40°C	cSt	■ 304	---	---	---
-------------	-----	-------	-----	-----	-----



CONTAMINATION

Water	%	NEG	---	---	---
Silicon	ppm	▲ 781	---	---	---
Sodium	ppm	■ 10	---	---	---
Potassium	ppm	■ 33	---	---	---



WEAR METALS

Iron	ppm	▲ 2580	---	---	---
Copper	ppm	■ 2	---	---	---
Lead	ppm	■ 0	---	---	---
Tin	ppm	■ 0	---	---	---
Aluminum	ppm	● 121	---	---	---
Chromium	ppm	▲ 26	---	---	---
Molybdenum	ppm	2	---	---	---
Nickel	ppm	■ 13	---	---	---
Titanium	ppm	10	---	---	---
Silver	ppm	0	---	---	---
Manganese	ppm	28	---	---	---
Vanadium	ppm	0	---	---	---



ADDITIVES

Calcium	ppm	239	---	---	---
Magnesium	ppm	13	---	---	---
Zinc	ppm	21	---	---	---
Phosphorus	ppm	894	---	---	---
Barium	ppm	4	---	---	---
Boron	ppm	73	---	---	---

Diagnosis

We advise that you check all areas where dirt can enter the system. We recommend that you drain the oil from the component if this has not already been done. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition. Gear wear is indicated. Component wear metal level(s) high for break in. Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress. The oil is no longer serviceable due to the presence of contaminants.

Depot: VOLVO0092
Unique No: 11111455
Signed: Don Baldrige
Report Date: 07 Jul 2024

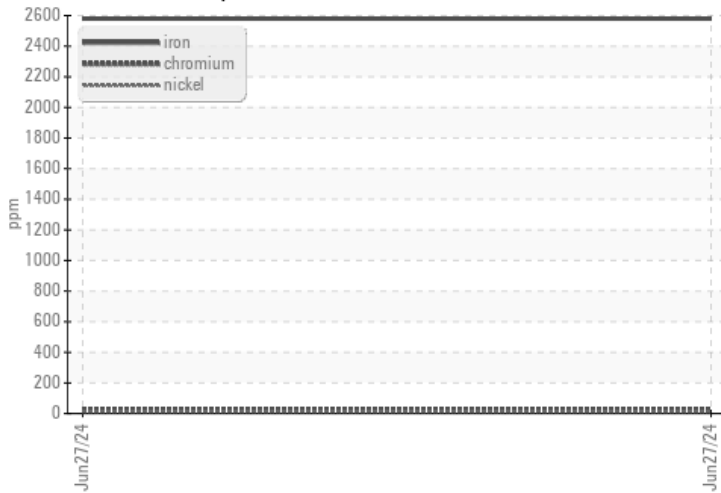


CONSTRUCTION EQUIPMENT

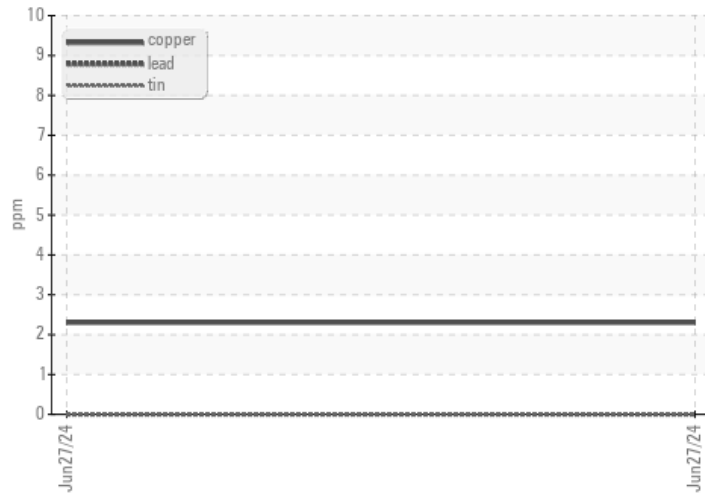


GRAPHS

▲ Ferrous Alloys



Non-ferrous Metals



Viscosity @ 40°C

