



# CONSTRUCTION EQUIPMENT

## CATERPILLAR M-2 - HYDRAULIC SYSTEM



**Sample No:** VCP442921  
**Oil Type:** ESSO NUTO H ISO 46  
**Job No:**



### SAMPLE INFORMATION

Sample Number	<b>VCP442921</b>	VCP408917	VCP390139	VCP340099
Sample Date	<b>21 Nov 2023</b>	25 Oct 2023	07 Mar 2023	05 Jan 2023
Machine Hours	<b>5984</b>	5892	5507	5274
Oil Hours	<b>1991</b>	2902	1500	1250
Oil Changed	<b>Changed</b>	Not Changd	Not Changd	Not Changd
Sample Status	<b>ABNORMAL</b>	NORMAL	ATTENTION	NORMAL

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### OIL CONDITION

Visc @ 40°C	cSt	<b>44.1</b>	44.3	44.1	44.1
Acid Number (AN)	mg KOH/g	<b>0.65</b>	0.59	0.58	0.63

### CONTAMINATION

Water	%	<b>NEG</b>	NEG	NEG	NEG
Particles >4µm		<b>▲ 10287</b>	3190	▲ 8526	2942
Particles >6µm		<b>▲ 1785</b>	366	▲ 1534	431
Particles >14µm		<b>▲ 278</b>	28	83	51
ISO 4406:1999 (c)		<b>21/18/15</b>	19/16/12	20/18/14	19/16/13
Silicon	ppm	<b>1</b>	2	2	2
Sodium	ppm	<b>&lt;1</b>	1	<1	<1
Potassium	ppm	<b>3</b>	2	<1	2

### 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. All component wear rates are normal. There is a high amount of particulates 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	<b>2</b>	4	3	5
Copper	ppm	<b>3</b>	4	4	4
Lead	ppm	<b>&lt;1</b>	<1	0	<1
Tin	ppm	<b>&lt;1</b>	0	0	0
Aluminum	ppm	<b>&lt;1</b>	<1	<1	0
Chromium	ppm	<b>2</b>	2	1	1
Molybdenum	ppm	<b>2</b>	4	4	4
Nickel	ppm	<b>&lt;1</b>	0	0	0
Titanium	ppm	<b>0</b>	<1	0	0
Silver	ppm	<b>&lt;1</b>	0	0	0
Manganese	ppm	<b>&lt;1</b>	<1	<1	<1
Vanadium	ppm	<b>0</b>	0	<1	0

### ADDITIVES

Calcium	ppm	<b>246</b>	233	239	241
Magnesium	ppm	<b>15</b>	5	16	12
Zinc	ppm	<b>683</b>	666	676	669
Phosphorus	ppm	<b>536</b>	516	505	523
Barium	ppm	<b>0</b>	0	0	0
Boron	ppm	<b>1</b>	1	<1	<1

**Depot:** MARDIC  
**Unique No:** 10762506  
**Signed:** Don Baldrige  
**Report Date:** 29 Nov 2023

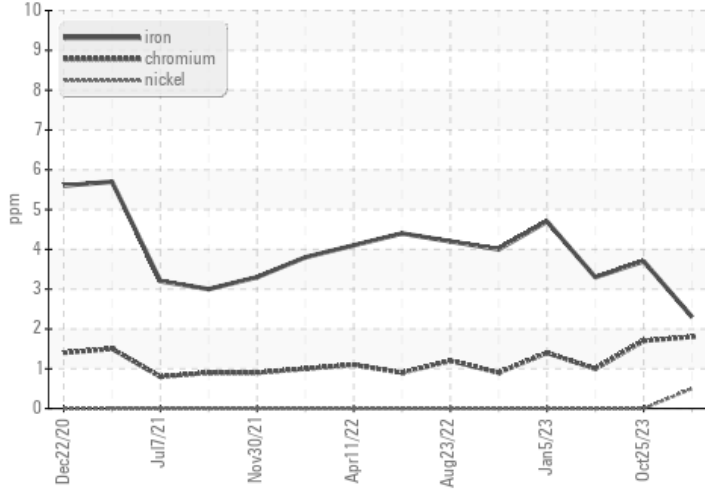


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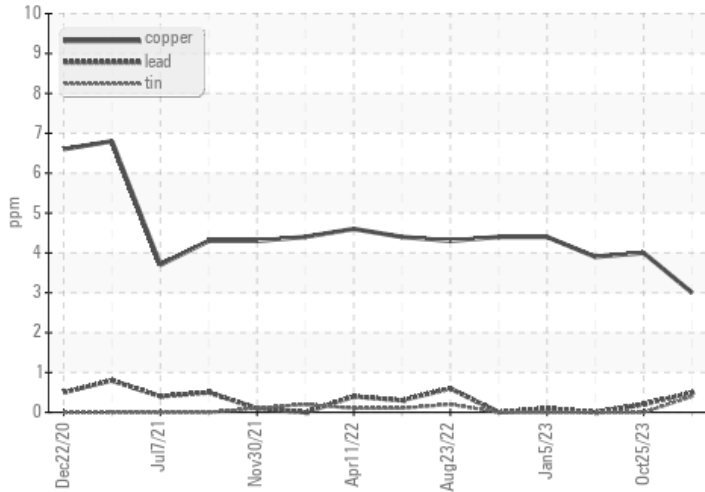


## VOLVO GRAPHS

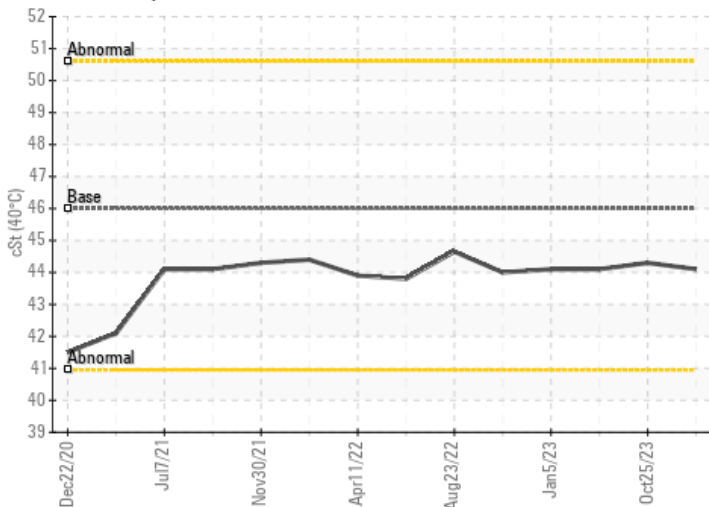
### Ferrous Alloys



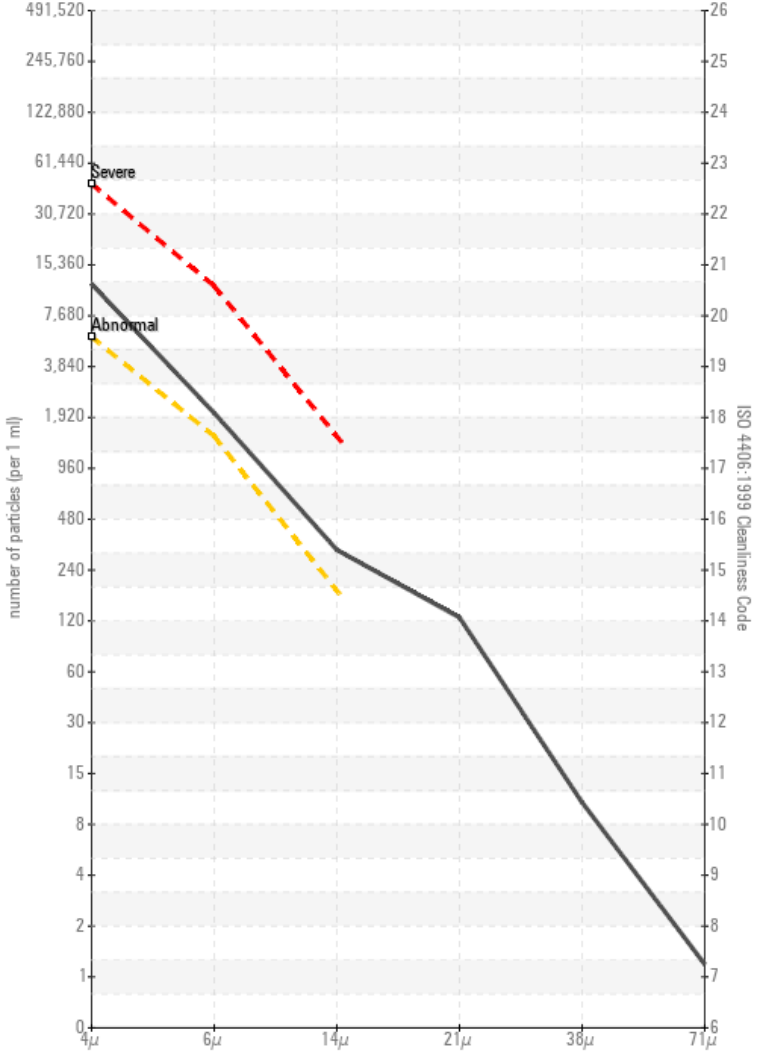
### Non-ferrous Metals



### Viscosity @ 40°C



### Particle Count



### Acid Number

