



# CONSTRUCTION EQUIPMENT

## CATERPILLAR M-2 - HYDRAULIC SYSTEM



**Sample No:** VCP408917  
**Oil Type:** ESSO NUTO H ISO 46  
**Job No:**



### SAMPLE INFORMATION

Sample Number	<b>VCP408917</b>	VCP390139	VCP340099	VCP366646
Sample Date	<b>25 Oct 2023</b>	07 Mar 2023	05 Jan 2023	07 Nov 2022
Machine Hours	<b>5892</b>	5507	5274	4984
Oil Hours	<b>2902</b>	1500	1250	1000
Oil Changed	<b>Not Chngd</b>	Not Chngd	Not Chngd	Not Chngd
Sample Status	<b>NORMAL</b>	ATTENTION	NORMAL	NORMAL

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### OIL CONDITION

Visc @ 40°C	cSt	<b>44.3</b>	44.1	44.1	44.0
Acid Number (AN)	mg KOH/g	<b>0.59</b>	0.58	0.63	0.59



### CONTAMINATION

Particles >4µm		<b>3190</b>	8526	2942	869
Particles >6µm		<b>366</b>	1534	431	109
Particles >14µm		<b>28</b>	83	51	7
ISO 4406:1999 (c)		<b>19/16/12</b>	20/18/14	19/16/13	17/14/10
Silicon	ppm	<b>2</b>	2	2	2
Sodium	ppm	<b>1</b>	<1	<1	<1
Potassium	ppm	<b>2</b>	<1	2	0

### Diagnosis

Resample at the next service interval to monitor. All component wear rates are normal. The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.



### WEAR METALS

Iron	ppm	<b>4</b>	3	5	4
Copper	ppm	<b>4</b>	4	4	4
Lead	ppm	<b>&lt;1</b>	0	<1	0
Tin	ppm	<b>0</b>	0	0	0
Aluminum	ppm	<b>&lt;1</b>	<1	0	<1
Chromium	ppm	<b>2</b>	1	1	<1
Molybdenum	ppm	<b>4</b>	4	4	4
Nickel	ppm	<b>0</b>	0	0	0
Titanium	ppm	<b>&lt;1</b>	0	0	0
Silver	ppm	<b>0</b>	0	0	0
Manganese	ppm	<b>&lt;1</b>	<1	<1	0
Vanadium	ppm	<b>0</b>	<1	0	0



### ADDITIVES

Calcium	ppm	<b>233</b>	239	241	237
Magnesium	ppm	<b>5</b>	16	12	12
Zinc	ppm	<b>666</b>	676	669	634
Phosphorus	ppm	<b>516</b>	505	523	503
Barium	ppm	<b>0</b>	0	0	0
Boron	ppm	<b>1</b>	<1	<1	2

**Depot:** MARDIC  
**Unique No:** 10723377  
**Signed:** Don Baldrige  
**Report Date:** 02 Nov 2023

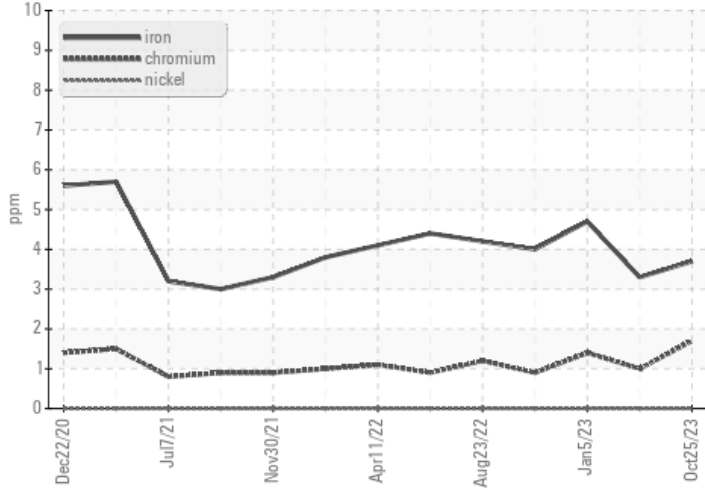


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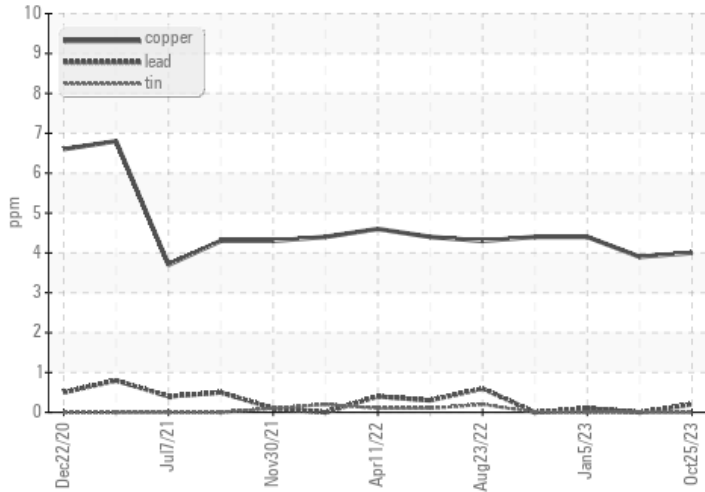


## GRAPHS

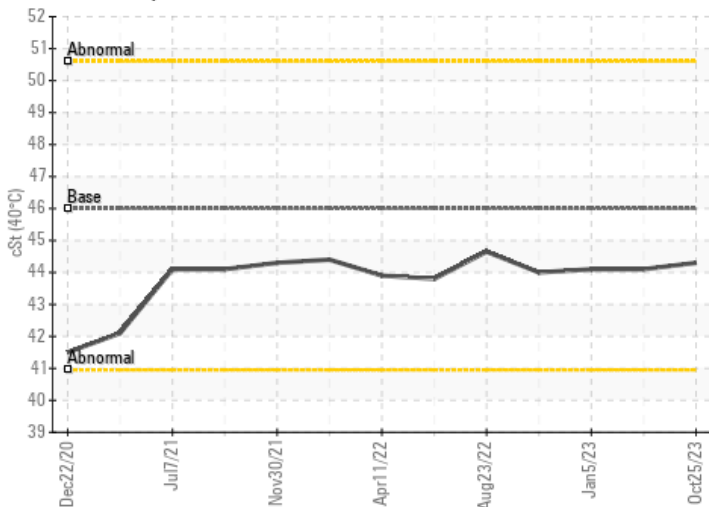
### Ferrous Alloys



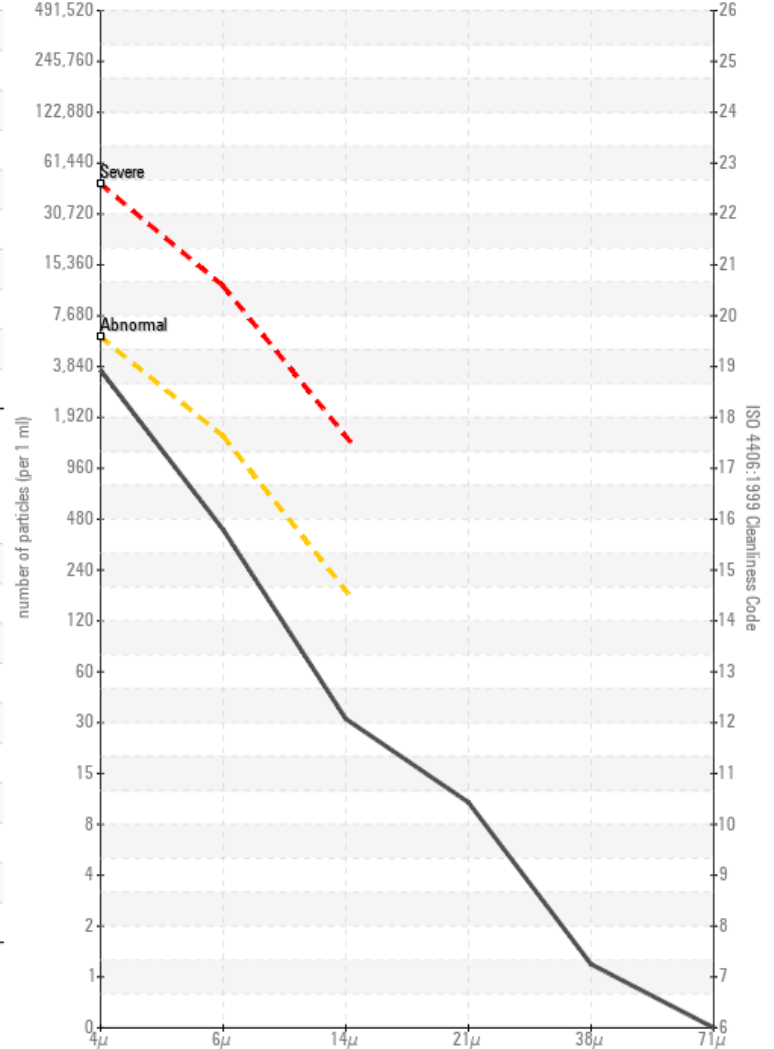
### Non-ferrous Metals



### Viscosity @ 40°C



### Particle Count



### Acid Number

