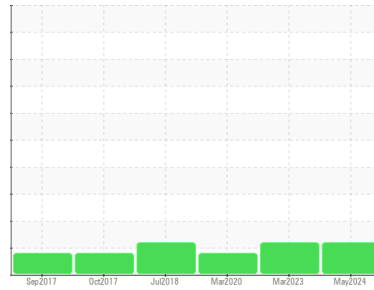


# OIL ANALYSIS REPORT



Machine Id  
**CATERPILLAR 12H GRADER 6438 (S/N 8MR00572)**  
 Component  
**Hydraulic System**  
 Fluid  
**TULCO LUBSOIL SUPER HYDRAULIC HZ 46 (--- GAL)**

Sample Rating Trend



## DIAGNOSIS

### Recommendation

We recommend you service the filters on this component if applicable. Resample at the next service interval to monitor.

### Wear

All component wear rates are normal.

### Contamination

There is a high amount of silt (particulates < 14 microns in size) present in the oil.

### Fluid Condition

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

## SAMPLE INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	<b>TO10002117</b>	TO10001753	TO1006885
Sample Date	Client Info	<b>31 May 2024</b>	20 Mar 2023	23 Mar 2020
Machine Age	hrs	<b>15007</b>	26300	13896
Oil Age	hrs	<b>1111</b>	263	1000
Oil Changed	Client Info	<b>Not Chngd</b>	Not Chngd	Changed
Sample Status		<b>ABNORMAL</b>	ABNORMAL	ABNORMAL

## WEAR METALS

method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m >20	<b>7</b>	6	29
Chromium	ppm	ASTM D5185m >10	<b>&lt;1</b>	0	<1
Nickel	ppm	ASTM D5185m >10	<b>0</b>	0	<1
Titanium	ppm	ASTM D5185m	<b>&lt;1</b>	0	<1
Silver	ppm	ASTM D5185m	<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m >10	<b>2</b>	1	6
Lead	ppm	ASTM D5185m >10	<b>&lt;1</b>	0	3
Copper	ppm	ASTM D5185m >75	<b>8</b>	6	33
Tin	ppm	ASTM D5185m >10	<b>&lt;1</b>	0	2
Antimony	ppm	ASTM D5185m	<b>---</b>	---	0
Vanadium	ppm	ASTM D5185m	<b>0</b>	0	0
Cadmium	ppm	ASTM D5185m	<b>0</b>	0	0

## ADDITIVES

method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m	<b>0</b>	0	91
Barium	ppm	ASTM D5185m	<b>1</b>	0	0
Molybdenum	ppm	ASTM D5185m	<b>&lt;1</b>	0	<1
Manganese	ppm	ASTM D5185m	<b>0</b>	<1	<1
Magnesium	ppm	ASTM D5185m	<b>197</b>	172	63
Calcium	ppm	ASTM D5185m	<b>200</b>	196	163
Phosphorus	ppm	ASTM D5185m	<b>738</b>	648	482
Zinc	ppm	ASTM D5185m	<b>897</b>	862	587
Sulfur	ppm	ASTM D5185m	<b>3576</b>	2969	2590

## CONTAMINANTS

method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m >20	<b>3</b>	4	13
Sodium	ppm	ASTM D5185m	<b>0</b>	2	<1
Potassium	ppm	ASTM D5185m >20	<b>1</b>	0	2
Water	%	ASTM D6304 >0.1	<b>NEG</b>	NEG	NEG
ppm Water	ppm	ASTM D6304 >1000	<b>---</b>	---	---

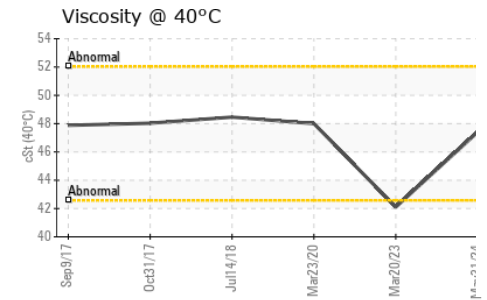
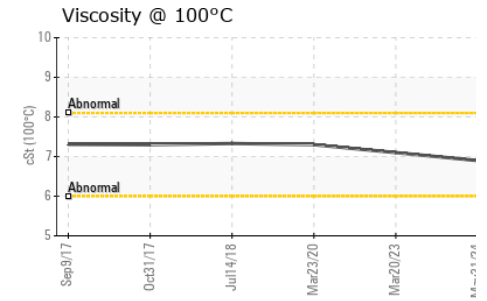
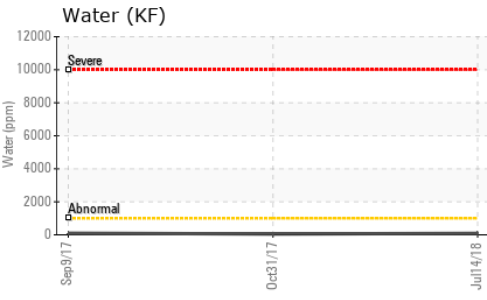
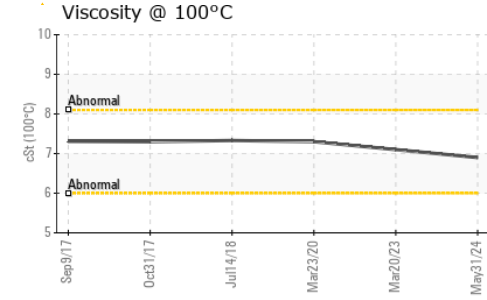
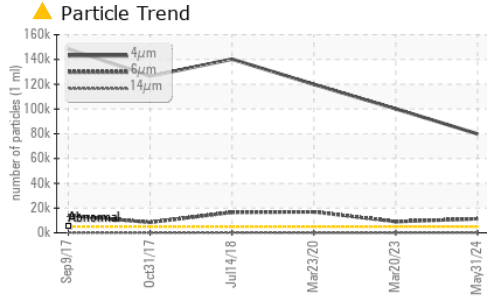
## FLUID CLEANLINESS

method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647 >5000	<b>▲ 79864</b>	▲ 100133	▲ 119897
Particles >6µm	ASTM D7647 >1300	<b>▲ 11350</b>	▲ 9019	▲ 16927
Particles >14µm	ASTM D7647 >160	<b>107</b>	39	77
Particles >21µm	ASTM D7647 >40	<b>11</b>	7	10
Particles >38µm	ASTM D7647 >10	<b>0</b>	1	0
Particles >71µm	ASTM D7647 >3	<b>0</b>	0	0
Oil Cleanliness	ISO 4406 (c) >19/17/14	<b>▲ 23/21/14</b>	▲ 24/20/12	▲ 24/21/13

## FLUID DEGRADATION

method	limit/base	current	history1	history2	
Acid Number (AN)	mg KOH/g	ASTM D8045	<b>0.82</b>	1.21	0.600

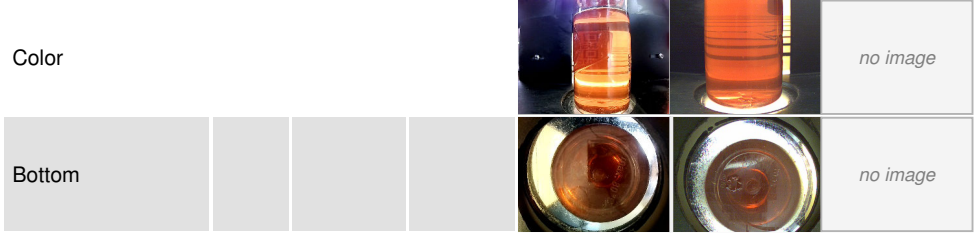
# OIL ANALYSIS REPORT



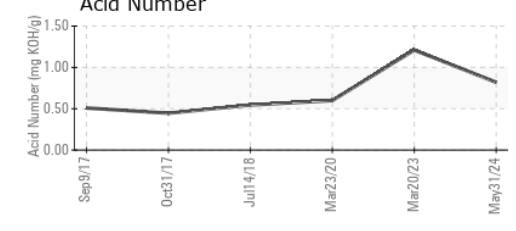
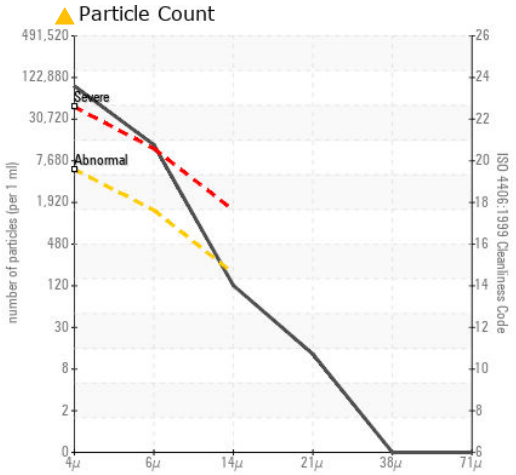
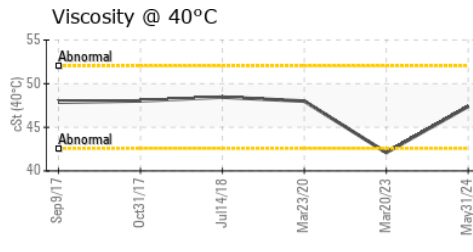
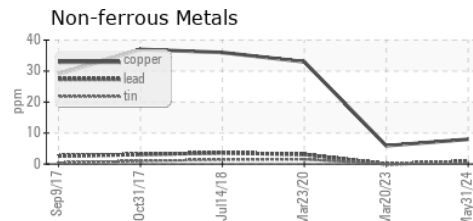
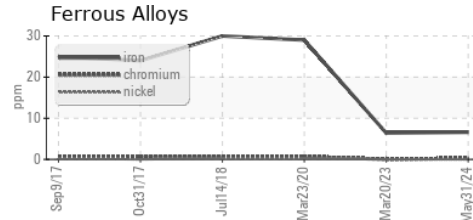
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	47.4	42.1	48.0
Visc @ 100°C	cSt	ASTM D445	6.9	7.1	7.3
Viscosity Index (VI)	Scale	ASTM D2270	100	129	112

SAMPLE IMAGES	method	limit/base	current	history1	history2
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## GRAPHS



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : TO10002117  
**Lab Number** : 06203359  
**Unique Number** : 11070820  
**Test Package** : MOB 2 ( Additional Tests: KF, KV100, VI )  
**Received** : 07 Jun 2024  
**Tested** : 11 Jun 2024  
**Diagnosed** : 11 Jun 2024 - Angela Borella

**ANCHOR STONE TULSA ROCK**  
 TULSA ROCK QUARRY, 66TH ST N 145TH AVENUE  
 TULSA, OK  
 US 74137  
 Contact: MIKE SNYDER  
 msnyder@anchorstoneco.com

To discuss this sample report, contact Customer Service at 1-800-237-1369.

\* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

T: (417)850-9635

F: