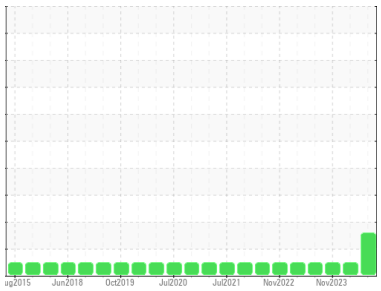
OIL ANALYSIS REPORT

Area
DE Samples - CAT LAB
Machine Id
CATERPILLAR 990 LOADER G 6427 (S/N BCR00127)
Component
Front Differential
Fluid
TULCO LUBSOIL TO-4 50 (--- GAL)

Sample Rating Trend



WATER

DIAGNOSIS

Recommendation
Resample at the next service interval to monitor.

Wear
All component wear rates are normal.

Contamination
There is a light concentration of water 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		**TO10003600**	TO10003131	TO10002897
Sample Date		Client Info		**31 May 2024**	05 Mar 2024	13 Nov 2023
Machine Age	hrs	Client Info		**49260**	48658	48135
Oil Age	hrs	Client Info		**4209**	3607	3070
Oil Changed		Client Info		**Not Changd**	Not Changd	Not Changd
Sample Status				**MARGINAL**	NORMAL	NORMAL

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184		**27**	23	20
Iron	ppm	ASTM D5185m	>500	**17**	14	15
Chromium	ppm	ASTM D5185m	>3	**<1**	<1	<1
Nickel	ppm	ASTM D5185m	>3	**1**	2	2
Titanium	ppm	ASTM D5185m	>2	**0**	<1	<1
Silver	ppm	ASTM D5185m	>2	**0**	<1	0
Aluminum	ppm	ASTM D5185m	>30	**4**	3	4
Lead	ppm	ASTM D5185m	>13	**3**	2	1
Copper	ppm	ASTM D5185m	>103	**5**	1	2
Tin	ppm	ASTM D5185m	>5	**2**	1	<1
Vanadium	ppm	ASTM D5185m		**0**	<1	<1
Cadmium	ppm	ASTM D5185m		**0**	<1	<1

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**0**	0	0
Barium	ppm	ASTM D5185m		**0**	0	0
Molybdenum	ppm	ASTM D5185m		**3**	<1	<1
Manganese	ppm	ASTM D5185m		**2**	<1	<1
Magnesium	ppm	ASTM D5185m		**27**	22	0
Calcium	ppm	ASTM D5185m		**4623**	3904	4066
Phosphorus	ppm	ASTM D5185m		**940**	792	719
Zinc	ppm	ASTM D5185m		**1106**	861	958
Sulfur	ppm	ASTM D5185m		**6104**	5139	4293

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>100	**21**	17	20
Sodium	ppm	ASTM D5185m		**6**	5	4
Potassium	ppm	ASTM D5185m	>20	**4**	2	0
Water	%	ASTM D6304	>.2	▲ **0.205**	---	---
ppm Water	ppm	ASTM D6304	>2000	▲ **2050**	---	---

FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		**0.89**	0.90	0.88

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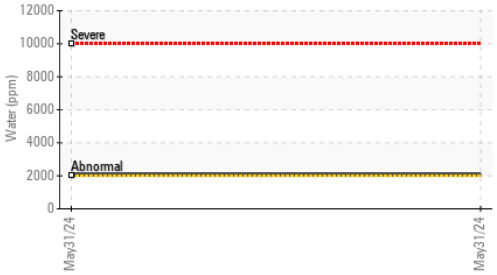
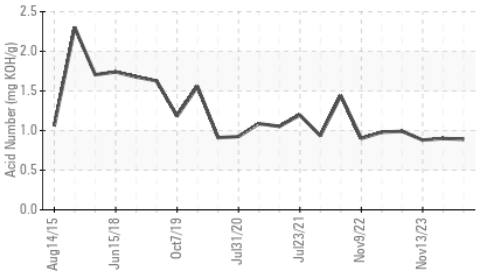
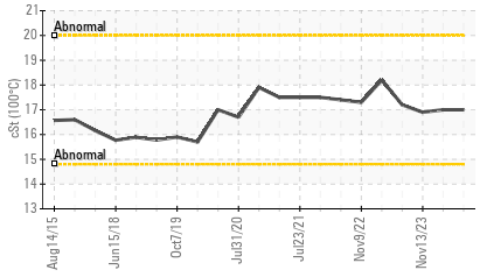
Water (KF)



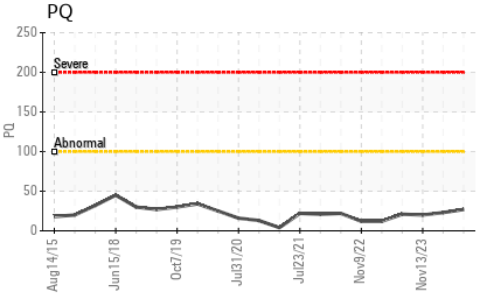
Acid Number



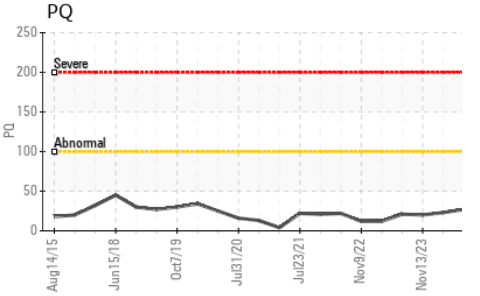
Viscosity @ 100°C



PQ



PQ



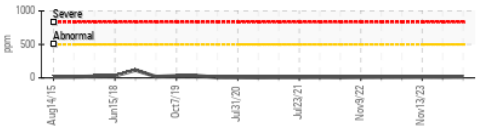
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Appearance	scalar	*Visual	NORML	**NORML**	NORML	NORML
Odor	scalar	*Visual	NORML	**NORML**	NORML	NORML
Emulsified Water	scalar	*Visual	>.2	**0.2%**	NEG	NEG
Free Water	scalar	*Visual		**NEG**	NEG	NEG

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445		**195**	195	196
Visc @ 100°C	cSt	ASTM D445		**17.0**	17.0	16.9
Viscosity Index (VI)	Scale	ASTM D2270		**92**	92	90

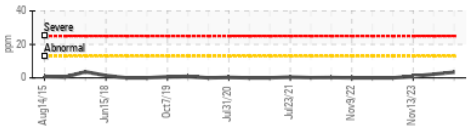
SAMPLE IMAGES	method	limit/base	current	history1	history2
Color			*no image*	*no image*	*no image*
Bottom			*no image*	*no image*	*no image*

GRAPHS

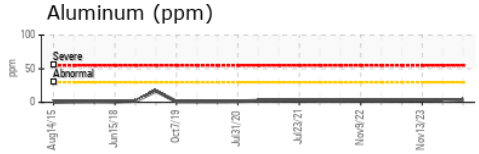
Iron (ppm)



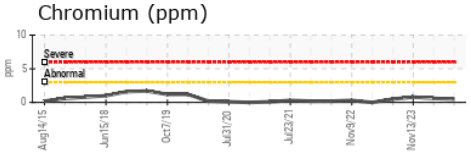
Lead (ppm)



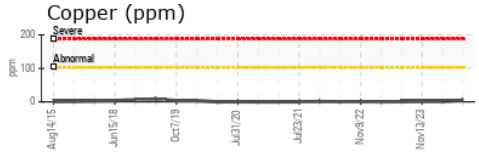
Aluminum (ppm)



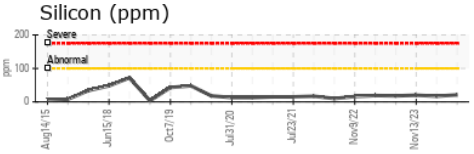
Chromium (ppm)



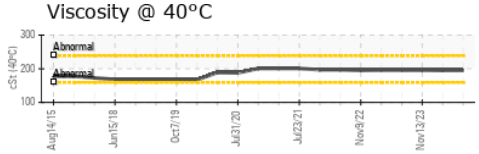
Copper (ppm)



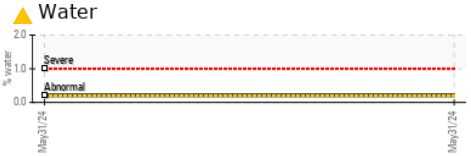
Silicon (ppm)



Viscosity @ 40°C



Water



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : TO10003600
Lab Number : 06205681
Unique Number : 11073142
Test Package : MOB 2 (Additional Tests: KF, KV100, PQ, VI)

Certificate L2367

Received : 10 Jun 2024
Tested : 12 Jun 2024
Diagnosed : 13 Jun 2024 - Don Baldridge

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)

ANCHOR STONE TULSA ROCK
TULSA ROCK QUARRY, 66TH ST N 145TH AVENUE
TULSA, OK
US 74137
Contact: MIKE SNYDER
msnyder@anchorstoneco.com
T: (417)850-9635
F: