



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	ATTENTION



Machine Id  
**CATERPILLAR 990G LOADER 6494 (S/N 4FR00287)**  
 Component  
**Diesel Engine**  
 Fluid  
**TULCO LUBSOIL DT CI-4 15W40 (--- GAL)**

**RECOMMENDATION**

No corrective action is recommended at this time. Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>TO10003661</b>	TO10003405	TO1005505
Sample Date		Client Info		<b>22 Jun 2024</b>	27 Apr 2024	28 May 2019
Machine Age	hrs	Client Info		<b>31455</b>	30989	24621
Oil Age	hrs	Client Info		<b>466</b>	211	0
Filter Age	hrs	Client Info		<b>466</b>	211	0
Oil Changed		Client Info		<b>Changed</b>	Not Changd	Changed
Filter Changed		Client Info		<b>Changed</b>	None	Changed
Sample Status				<b>ATTENTION</b>	ATTENTION	NORMAL

**WEAR**

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	<b>37</b>	24	11
Chromium	ppm	ASTM D5185m	>20	<b>0</b>	<1	<1
Nickel	ppm	ASTM D5185m	>2	<b>0</b>	0	<1
Titanium	ppm	ASTM D5185m	>2	<b>0</b>	0	<1
Silver	ppm	ASTM D5185m	>2	<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m	>25	<b>0</b>	<1	1
Lead	ppm	ASTM D5185m	>40	<b>7</b>	0	2
Copper	ppm	ASTM D5185m	>330	<b>2</b>	1	2
Tin	ppm	ASTM D5185m	>15	<b>0</b>	0	---
Vanadium	ppm	ASTM D5185m		<b>0</b>	0	---
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE

**CONTAMINATION**

There is no indication of any contamination in the oil.

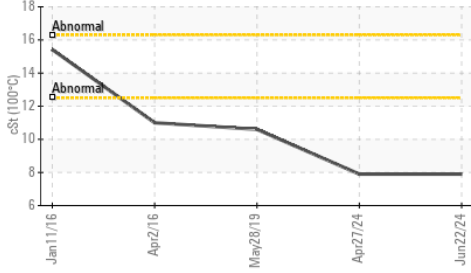
Silicon	ppm	ASTM D5185m	>25	<b>1</b>	2	2
Potassium	ppm	ASTM D5185m	>20	<b>0</b>	<1	10
Fuel		WC Method	>5	<b>&lt;1.0</b>	0.0	<1.0
Water		WC Method	>0.2	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	*ASTM D7844	>3	<b>0.4</b>	0.3	0.3
Nitration	Abs/cm	*ASTM D7624	>20	<b>4.8</b>	4.6	5.7
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>15.1</b>	14.3	16.9
Silt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Debris	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Appearance	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Odor	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	<b>NEG</b>	NEG	NEG

**FLUID CONDITION**

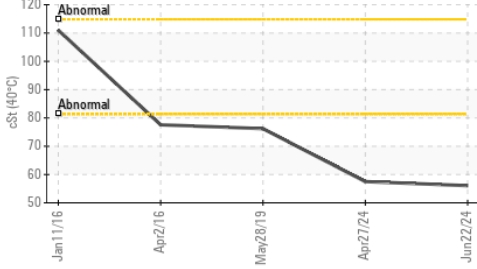
The oil viscosity is lower than normal. Additive levels indicate the addition of a different brand, or type of oil. Confirm oil type.

Sodium	ppm	ASTM D5185m		<b>4</b>	2	1
Boron	ppm	ASTM D5185m		<b>2</b>	3	8
Barium	ppm	ASTM D5185m		<b>0</b>	0	<1
Molybdenum	ppm	ASTM D5185m		<b>13</b>	17	47
Manganese	ppm	ASTM D5185m		<b>0</b>	<1	<1
Magnesium	ppm	ASTM D5185m		<b>345</b>	394	709
Calcium	ppm	ASTM D5185m		<b>380</b>	429	928
Phosphorus	ppm	ASTM D5185m		<b>868</b>	908	963
Zinc	ppm	ASTM D5185m		<b>1008</b>	1118	1098
Sulfur	ppm	ASTM D5185m		<b>3372</b>	3658	2566
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>5.4</b>	5.5	11.1
Base Number (BN)	mg KOH/g	ASTM D2896		<b>3.87</b>	4.24	7.35
Visc @ 40°C	cSt	ASTM D445		<b>56.06</b>	57.5	76.2
Visc @ 100°C	cSt	ASTM D445		<b>7.9</b>	7.9	10.6
Viscosity Index (VI)	Scale	ASTM D2270		<b>106</b>	102	124

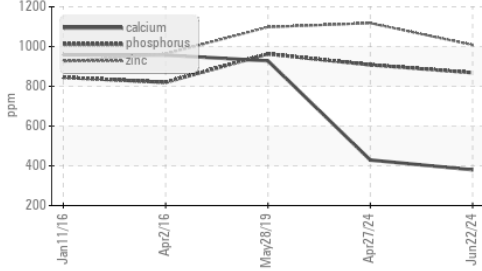
● Viscosity @ 100°C



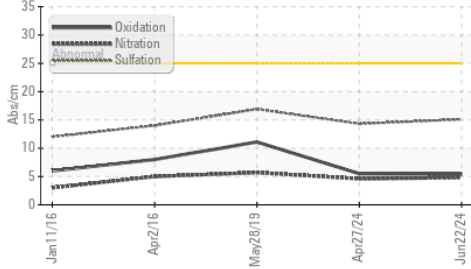
● Viscosity @ 40°C



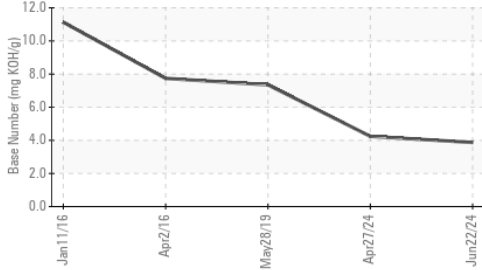
● Additives



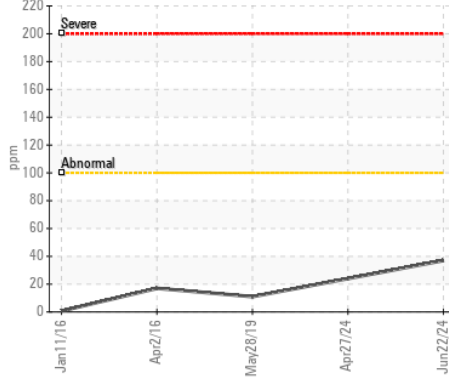
FT-IR (Direct Trend)



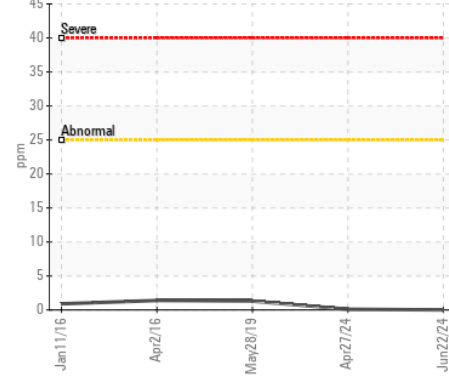
Base Number



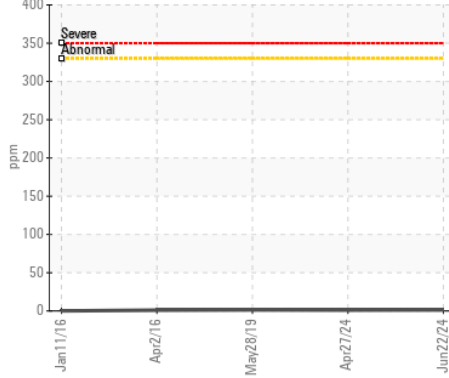
Iron (ppm)



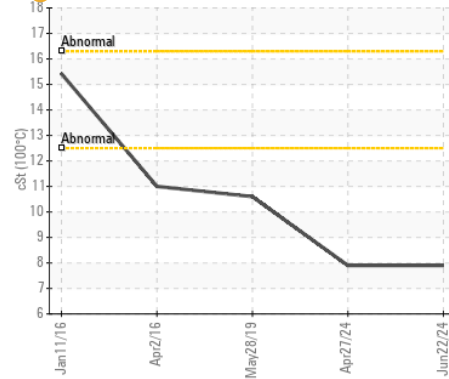
Aluminum (ppm)



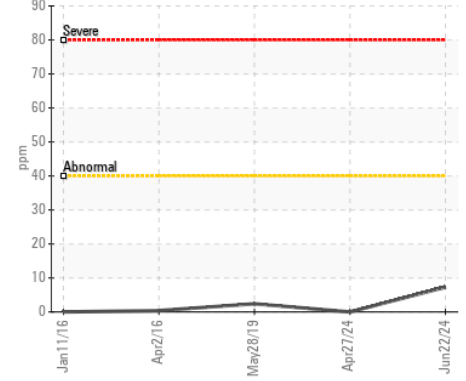
Copper (ppm)



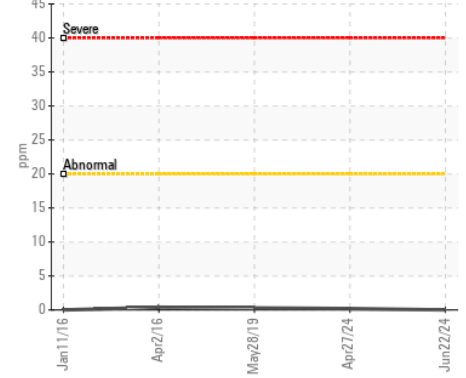
● Viscosity @ 100°C



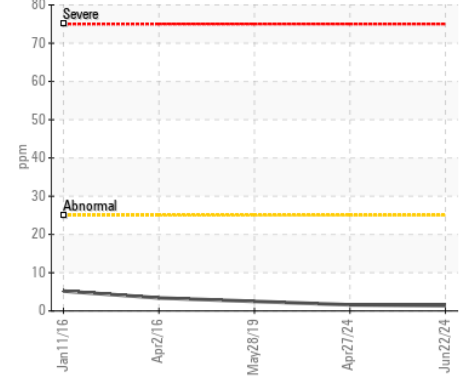
Lead (ppm)



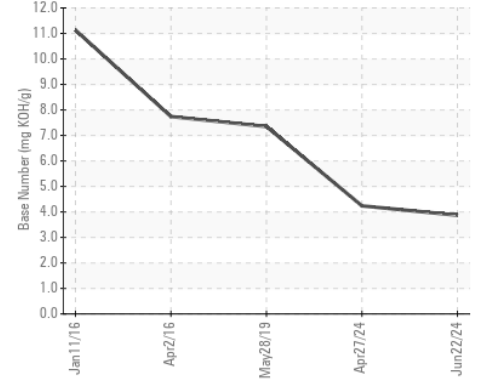
Chromium (ppm)



Silicon (ppm)



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : TO10003661

Lab Number : 06225334

Unique Number : 11103531

Test Package : MOB 2 ( Additional Tests: KV40, VI )

Received : 01 Jul 2024

Tested : 05 Jul 2024

Diagnosed : 06 Jul 2024 - Don Baldridge

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T:

F:

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)