



OIL ANALYSIS REPORT

WEAR	<b>ABNORMAL</b>
CONTAMINATION	<b>NORMAL</b>
FLUID CONDITION	<b>NORMAL</b>



Machine Id  
**CATERPILLAR 12H GRADER 6438 (S/N 8MN00572)**  
 Component  
**Right Final Drive**  
 Fluid  
**TULBO LUBSOIL TO-4 50 (--- GAL)**

**RECOMMENDATION**

We recommend an early resample to monitor this condition. (Customer Sample Comment: 263 is machines hrs)

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>TO10001721</b>	TO1006883	TO1005547
Sample Date		Client Info		<b>20 Mar 2023</b>	23 Mar 2020	09 Sep 2017
Machine Age	hrs	Client Info		<b>263</b>	13896	13102
Oil Age	hrs	Client Info		<b>263</b>	1019	0
Filter Age	hrs	Client Info		<b>0</b>	0	0
Oil Changed		Client Info		<b>Not Changd</b>	Not Changd	N/A
Filter Changed		Client Info		<b>None</b>	N/A	N/A
Sample Status				<b>ABNORMAL</b>	NORMAL	NORMAL

**WEAR**

Gear wear is indicated.

PQ		ASTM D8184	>500	<b>102</b>	452	237
Iron	ppm	ASTM D5185m	>500	<b>▲ 533</b>	240	139
Chromium	ppm	ASTM D5185m	>10	<b>▲ 15</b>	<1	<1
Nickel	ppm	ASTM D5185m		<b>1</b>	<1	<1
Titanium	ppm	ASTM D5185m		<b>2</b>	0	0
Silver	ppm	ASTM D5185m		<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m	>25	<b>▲ 22</b>	2	1
Lead	ppm	ASTM D5185m	>25	<b>2</b>	<1	<1
Copper	ppm	ASTM D5185m	>50	<b>2</b>	<1	<1
Tin	ppm	ASTM D5185m	>10	<b>0</b>	0	0
Vanadium	ppm	ASTM D5185m		<b>1</b>	0	0
White Metal	scalar	*Visual	NONE	<b>NONE</b>	MODER	LIGHT
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE

**CONTAMINATION**

There is no indication of any contamination in the oil.

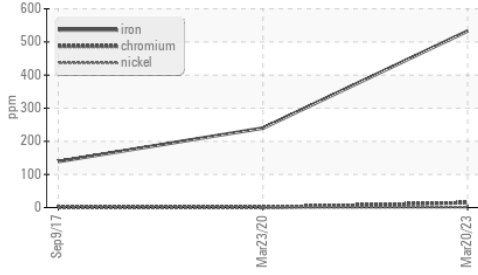
Silicon	ppm	ASTM D5185m	>75	<b>23</b>	14	11
Potassium	ppm	ASTM D5185m	>20	<b>6</b>	<1	0
Water		WC Method	>0.2	<b>NEG</b>	NEG	NEG
Silt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Debris	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Appearance	scalar	*Visual	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**

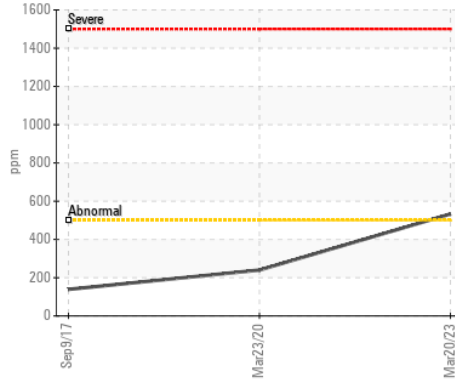
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m		<b>11</b>	<1	1
Boron	ppm	ASTM D5185m		<b>&lt;1</b>	5	4
Barium	ppm	ASTM D5185m		<b>65</b>	0	0
Molybdenum	ppm	ASTM D5185m		<b>11</b>	2	3
Manganese	ppm	ASTM D5185m		<b>7</b>	2	2
Magnesium	ppm	ASTM D5185m		<b>16</b>	14	16
Calcium	ppm	ASTM D5185m		<b>3230</b>	4098	3856
Phosphorus	ppm	ASTM D5185m		<b>1167</b>	932	927
Zinc	ppm	ASTM D5185m		<b>1352</b>	1081	1079
Sulfur	ppm	ASTM D5185m		<b>10388</b>	7261	3502
Acid Number (AN)	mg KOH/g	ASTM D8045		<b>1.27</b>	1.302	1.143
Visc @ 40°C	cSt	ASTM D445		<b>92.8</b>	189	186.4
Visc @ 100°C	cSt	ASTM D445		<b>10.6</b>	17.2	17.33
Viscosity Index (VI)	Scale	ASTM D2270		<b>96</b>	97	99

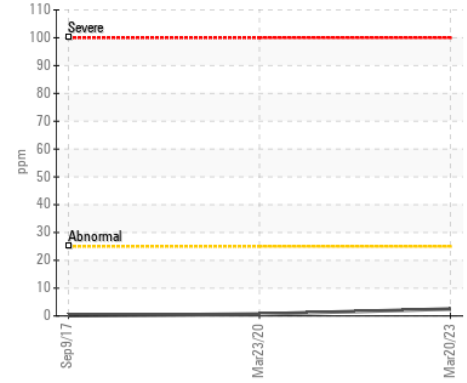
▲ Ferrous Alloys



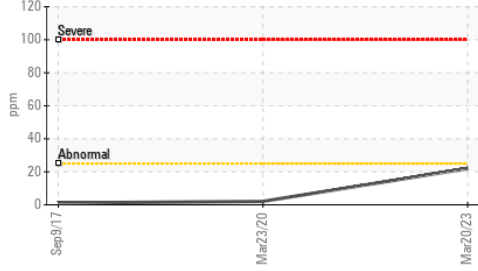
▲ Iron (ppm)



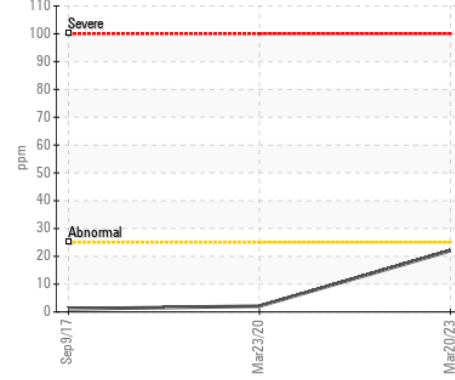
▲ Lead (ppm)



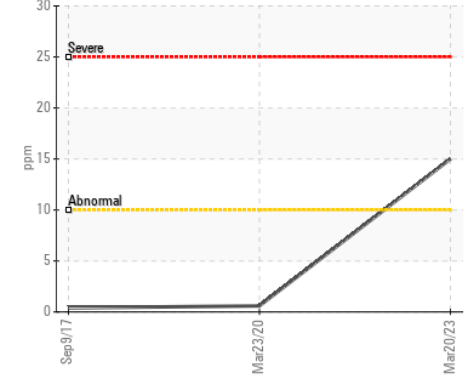
▲ Aluminum (ppm)



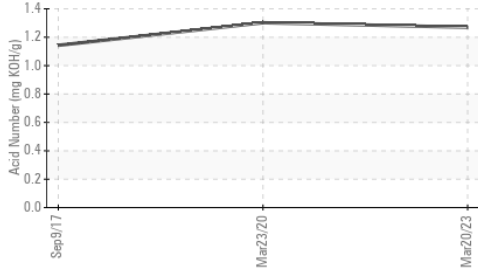
▲ Aluminum (ppm)



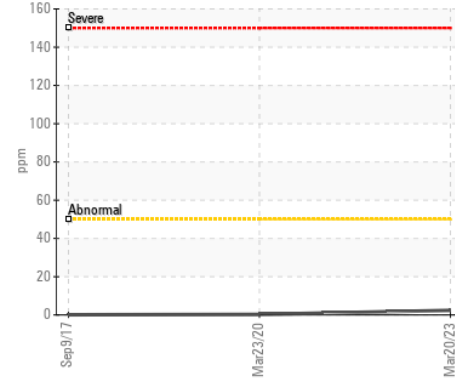
▲ Chromium (ppm)



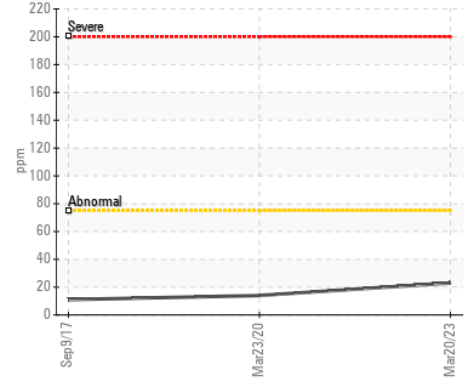
▲ Acid Number



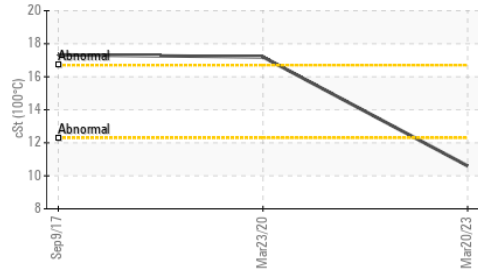
▲ Copper (ppm)



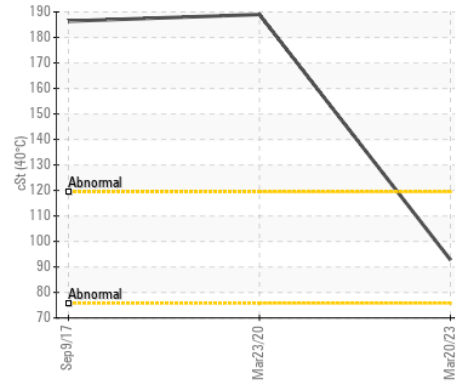
▲ Silicon (ppm)



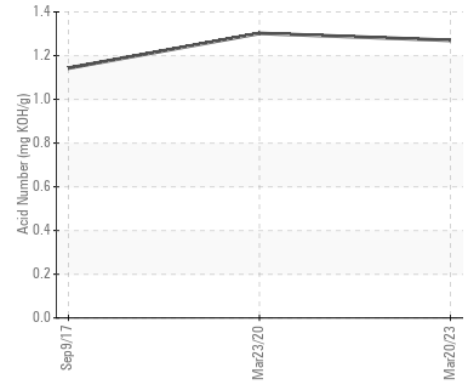
▲ Viscosity @ 100°C



▲ Viscosity @ 40°C



▲ Acid Number



Certificate L2367

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

Sample No. : TO10001721

Lab Number : 05804115

Unique Number : 10401644

Test Package : MOB 2 ( Additional Tests: KV100, PQ, VI )

Received : 28 Mar 2023

Tested : 31 Mar 2023

Diagnosed : 31 Mar 2023 - Jonathan Hester

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)

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