OIL ANALYSIS REPORT

Sample Rating Trend

ISO

Machine Id
CATERPILLAR 990K 6088 (S/N A9P00362)
Component
Hydraulic System
Fluid
TULCO LUBSOIL SUPER HYDRAULIC HZ 46 (52 GAL)

DIAGNOSIS

Recommendation
No corrective action is recommended at this time. Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

Wear
All component wear rates are normal.

Contamination
There is a moderate 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		**TO10002084**	TO10002895	TO10002443
Sample Date		Client Info		**22 Mar 2024**	06 Nov 2023	22 Aug 2023
Machine Age	hrs	Client Info		**15159**	14829	14321
Oil Age	hrs	Client Info		**15159**	3594	3086
Oil Changed		Client Info		**Changed**	Not Changd	Not Changd
Sample Status				**ATTENTION**	NORMAL	NORMAL

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>20	**<1**	<1	<1
Chromium	ppm	ASTM D5185m	>20	**0**	0	0
Nickel	ppm	ASTM D5185m	>20	**0**	0	0
Titanium	ppm	ASTM D5185m		**0**	0	0
Silver	ppm	ASTM D5185m		**0**	0	0
Aluminum	ppm	ASTM D5185m	>20	**0**	0	0
Lead	ppm	ASTM D5185m	>20	**0**	1	0
Copper	ppm	ASTM D5185m	>20	**<1**	0	<1
Tin	ppm	ASTM D5185m	>20	**0**	<1	0
Vanadium	ppm	ASTM D5185m		**0**	0	<1
Cadmium	ppm	ASTM D5185m		**0**	0	0

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		**0**	0	0
Manganese	ppm	ASTM D5185m		**0**	0	0
Magnesium	ppm	ASTM D5185m		**176**	167	156
Calcium	ppm	ASTM D5185m		**198**	154	172
Phosphorus	ppm	ASTM D5185m		**744**	727	743
Zinc	ppm	ASTM D5185m		**894**	883	940
Sulfur	ppm	ASTM D5185m		**3194**	2687	3383

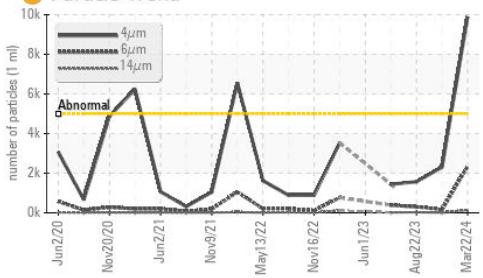
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>15	**<1**	2	<1
Sodium	ppm	ASTM D5185m		**3**	1	3
Potassium	ppm	ASTM D5185m	>20	**0**	1	<1
Water	%	ASTM D6304	>0.05	**NEG**	0.017	NEG
ppm Water	ppm	ASTM D6304	>500	**---**	172.4	---

FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>5000	**9886**	2305	1570
Particles >6µm		ASTM D7647	>1300	**2351**	163	303
Particles >14µm		ASTM D7647	>160	**135**	8	29
Particles >21µm		ASTM D7647	>40	**24**	3	8
Particles >38µm		ASTM D7647	>10	**0**	0	0
Particles >71µm		ASTM D7647	>3	**0**	0	0
Oil Cleanliness		ISO 4406 (c)	>19/17/14	**20/18/14**	18/15/10	18/15/12

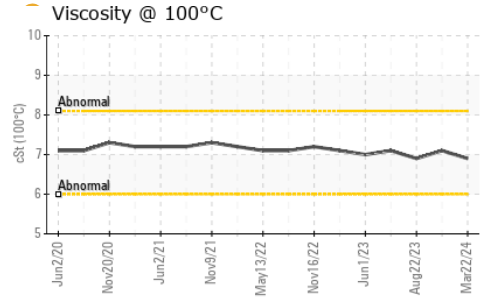
FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		**0.80**	0.73	0.85

OIL ANALYSIS REPORT

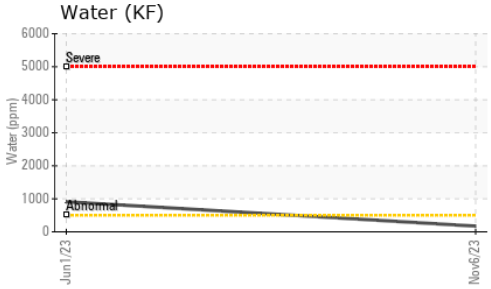
Particle Trend



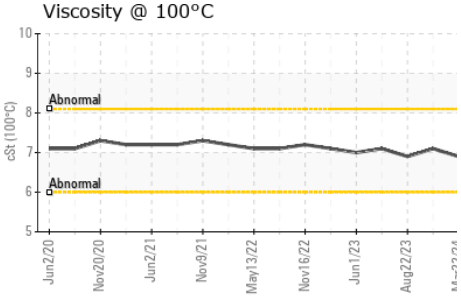
Viscosity @ 100°C



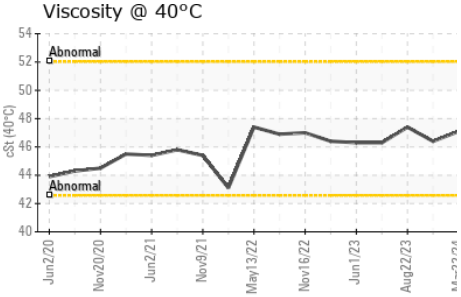
Water (KF)



Viscosity @ 100°C



Viscosity @ 40°C



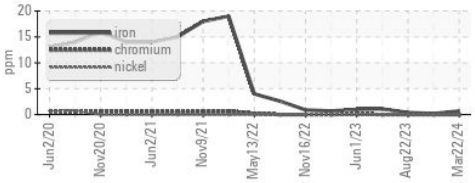
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Appearance	scalar	*Visual	NORML	**NORML**	NORML	NORML
Odor	scalar	*Visual	NORML	**NORML**	NORML	NORML
Emulsified Water	scalar	*Visual	>0.05	**NEG**	NEG	NEG
Free Water	scalar	*Visual		**NEG**	NEG	NEG

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445		**47.1**	46.4	47.4
Visc @ 100°C	cSt	ASTM D445		**6.9**	7.1	6.9
Viscosity Index (VI)	Scale	ASTM D2270		**101**	111	100

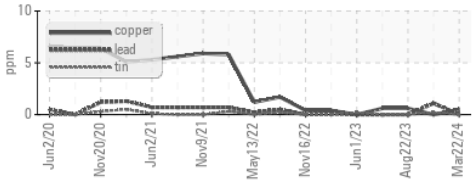
SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					

GRAPHS

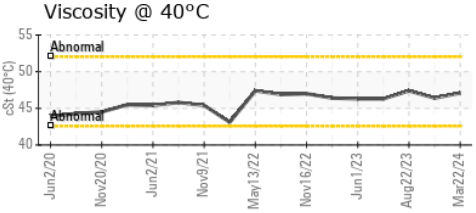
Ferrous Alloys



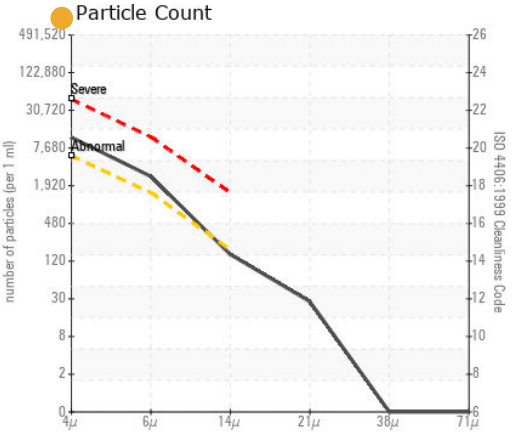
Non-ferrous Metals



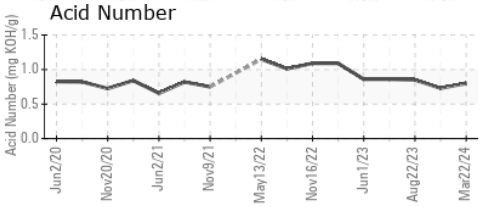
Viscosity @ 40°C



Particle Count



Acid Number



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : TO10002084 **Received** : 29 Mar 2024
Lab Number : 06133982 **Tested** : 03 Apr 2024
Unique Number : 10953447 **Diagnosed** : 03 Apr 2024 - Don Baldridge
Test Package : MOB 2 (Additional Tests: KF, KV100, VI)

Certificate L2367

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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Report Id: ANCTUL [WUSCAR] 06133982 (Generated: 04/03/2024 16:16:13) Rev: 1

Submitted By: SKIP SAENGERHAUSEN