



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	ABNORMAL
FLUID CONDITION	NORMAL



Machine Id
CATERPILLAR 990 LOADER G 6427 (S/N BCR00127)

Component
Hydraulic System

Fluid
TULCO LUBSOIL SUPER HYDRAULIC HZ 46 (--- GAL)

RECOMMENDATION

The filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		TO10002885	TO10002400	TO10001755
Sample Date		Client Info		13 Nov 2023	18 Jul 2023	27 Mar 2023
Machine Age	hrs	Client Info		48135	47549	47048
Oil Age	hrs	Client Info		2587	2001	1500
Filter Age	hrs	Client Info		586	501	504
Oil Changed		Client Info		Not Changed	Not Changed	Not Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				ABNORMAL	ABNORMAL	ABNORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>20	8	14	9
Chromium	ppm	ASTM D5185m	>20	3	6	4
Nickel	ppm	ASTM D5185m	>20	<1	0	0
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>20	1	1	<1
Lead	ppm	ASTM D5185m	>20	0	0	0
Copper	ppm	ASTM D5185m	>20	4	8	8
Tin	ppm	ASTM D5185m	>20	0	0	0
Vanadium	ppm	ASTM D5185m		<1	0	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

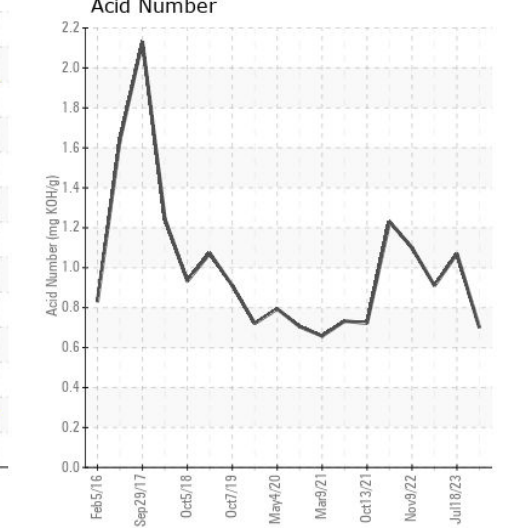
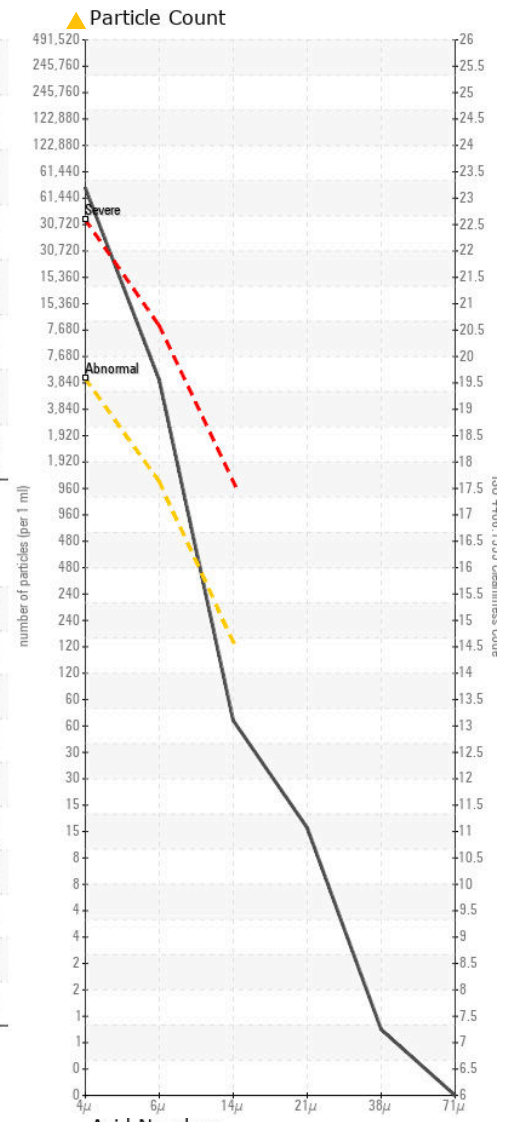
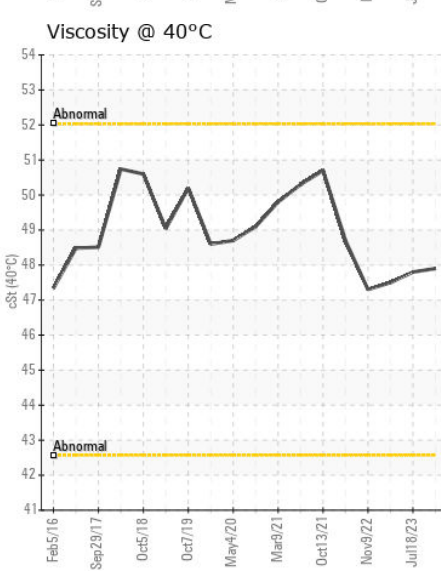
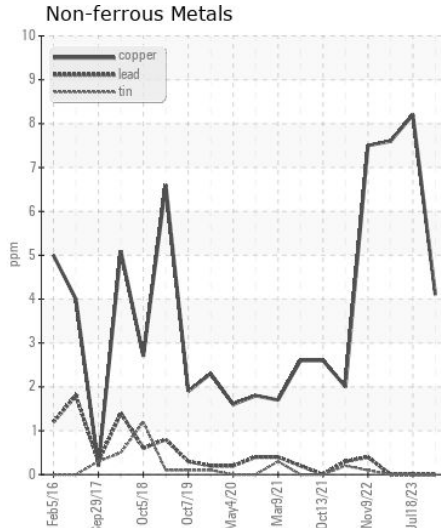
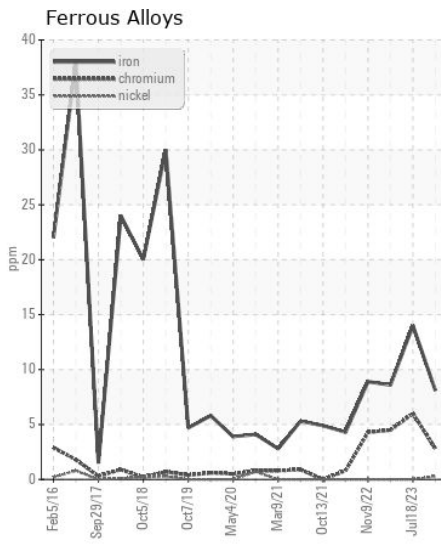
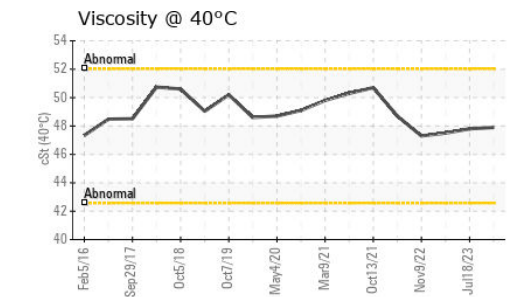
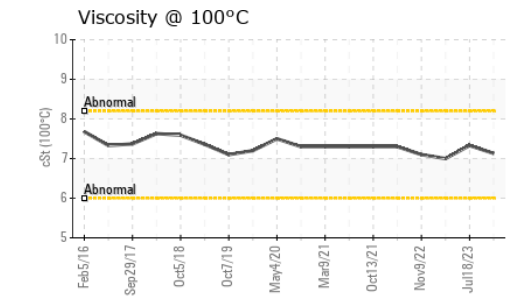
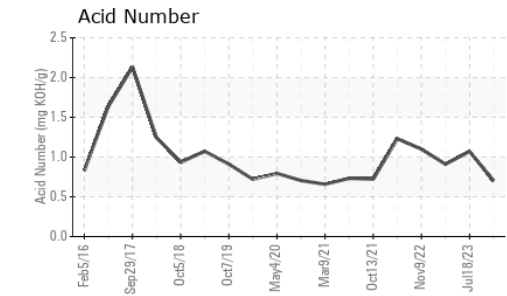
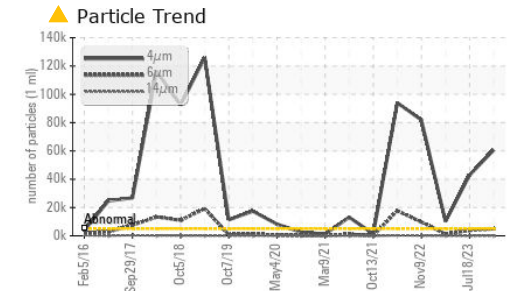
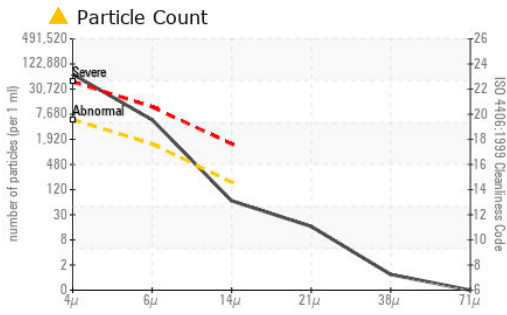
There is a high amount of silt (particulates < 14 microns in size) present in the oil.

Silicon	ppm	ASTM D5185m	>15	4	3	4
Potassium	ppm	ASTM D5185m	>20	<1	<1	<1
Water	%	ASTM D6304	>0.05	NEG	NEG	NEG
Particles >4µm		ASTM D7647	>5000	▲ 60672	▲ 42841	▲ 10239
Particles >6µm		ASTM D7647	>1300	▲ 4918	▲ 3927	1226
Particles >14µm		ASTM D7647	>160	57	16	55
Particles >21µm		ASTM D7647	>40	14	3	8
Particles >38µm		ASTM D7647	>10	1	0	2
Particles >71µm		ASTM D7647	>3	0	0	0
Oil Cleanliness		ISO 4406 (c)	>19/17/14	▲ 23/19/13	▲ 23/19/11	▲ 21/17/13
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

FLUID CONDITION

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

Sodium	ppm	ASTM D5185m		3	2	2
Boron	ppm	ASTM D5185m		0	0	0
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		<1	0	0
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		87	74	67
Calcium	ppm	ASTM D5185m		119	136	109
Phosphorus	ppm	ASTM D5185m		783	1052	984
Zinc	ppm	ASTM D5185m		1019	1366	1247
Sulfur	ppm	ASTM D5185m		2678	4483	4101
Acid Number (AN)	mg KOH/g	ASTM D8045		0.70	1.07	0.91
Visc @ 40°C	cSt	ASTM D445		47.9	47.8	47.5
Visc @ 100°C	cSt	ASTM D445		7.13	7.33	7
Viscosity Index (VI)	Scale	ASTM D2270		107	114	103



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : TO10002885 **Received** : 17 Nov 2023
Lab Number : 06011488 **Tested** : 29 Nov 2023
Unique Number : 10750632 **Diagnosed** : 29 Nov 2023 - Jonathan Hester
Test Package : MOB 2 (Additional Tests: KF, KV100, VI)

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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)