



OIL ANALYSIS REPORT

WEAR	SEVERE
CONTAMINATION	SEVERE
FLUID CONDITION	NORMAL



Machine Id
CATERPILLAR 420 FST BACKHOE 6010 (S/N SKR04232)
Component
Front Right Planetary
Fluid
TULCO LUBSOIL TO-4 50 (0 GAL)

RECOMMENDATION

We advise that you check for the source of water entry. We advise that you check all areas where dirt can enter the system. The oil change at the time of sampling has been noted. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		TO10002857	TO10002082	TO10002414
Sample Date		Client Info		14 Nov 2023	18 Sep 2023	25 Jul 2023
Machine Age	hrs	Client Info		12883	12601	12310
Oil Age	hrs	Client Info		282	291	271
Filter Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		None	None	None
Sample Status				SEVERE	SEVERE	SEVERE

WEAR

Gear wear is indicated.

PQ		ASTM D8184		▲ 1291	▲ 1325	▲ 1396
Iron	ppm	ASTM D5185m	>150	▲ 1914	▲ 5217	▲ 2665
Chromium	ppm	ASTM D5185m	>10	▲ 11	▲ 32	▲ 16
Nickel	ppm	ASTM D5185m	>10	2	▲ 14	2
Titanium	ppm	ASTM D5185m		23	51	38
Silver	ppm	ASTM D5185m		<1	0	0
Aluminum	ppm	ASTM D5185m	>25	● 336	● 788	● 444
Lead	ppm	ASTM D5185m	>100	4	14	9
Copper	ppm	ASTM D5185m	>50	6	27	13
Tin	ppm	ASTM D5185m	>10	4	0	4
Vanadium	ppm	ASTM D5185m		1	2	1
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

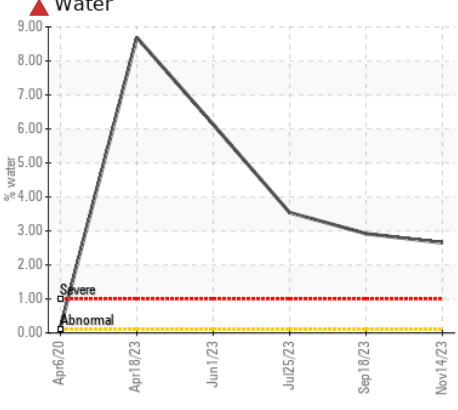
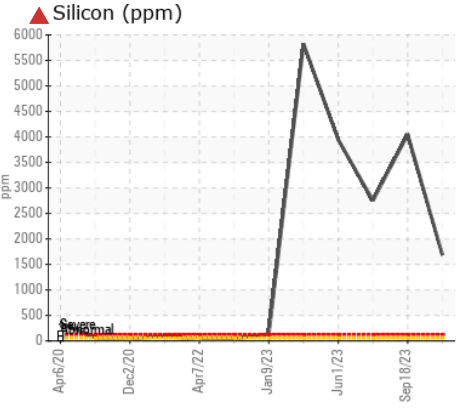
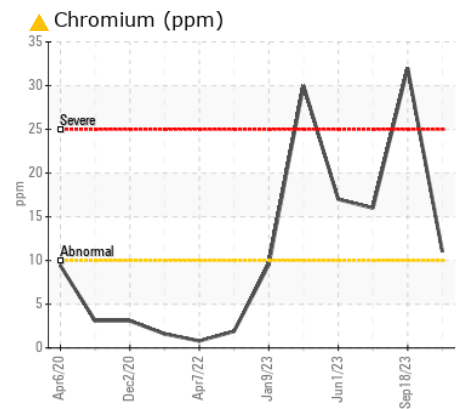
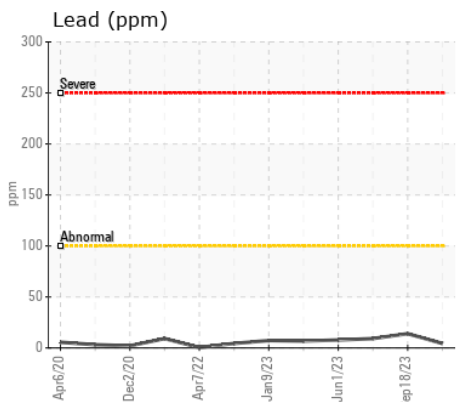
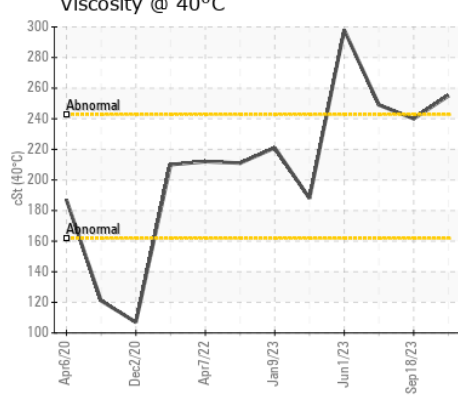
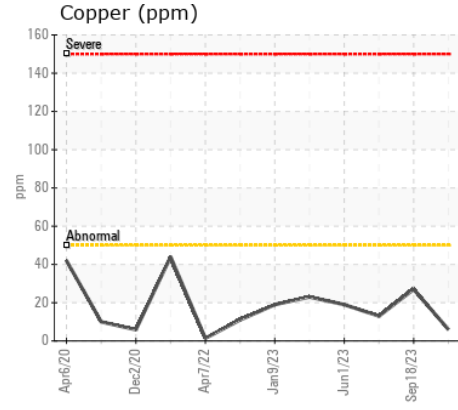
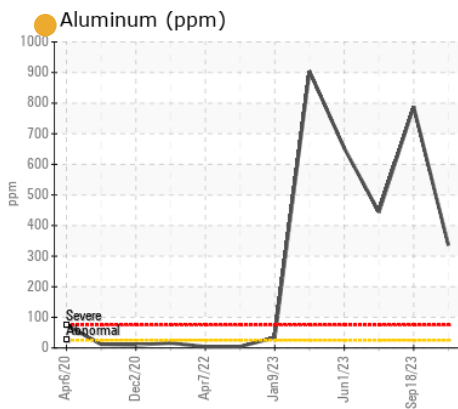
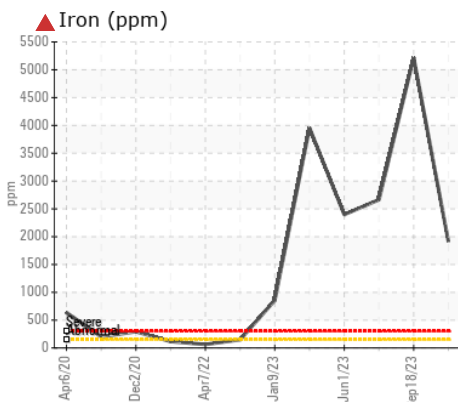
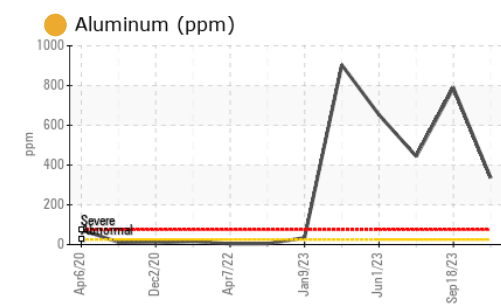
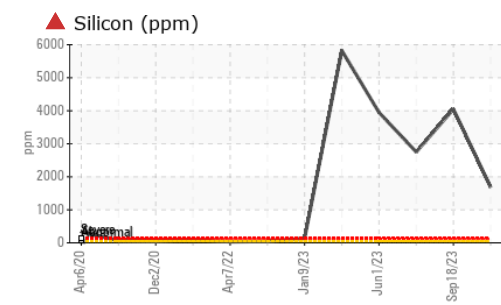
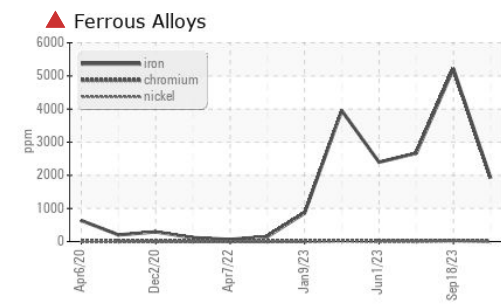
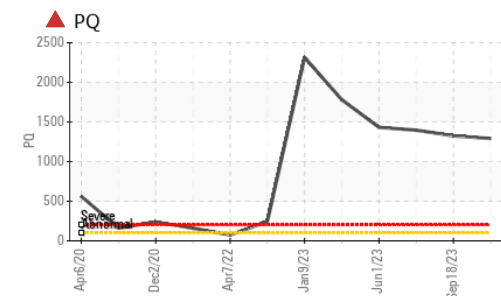
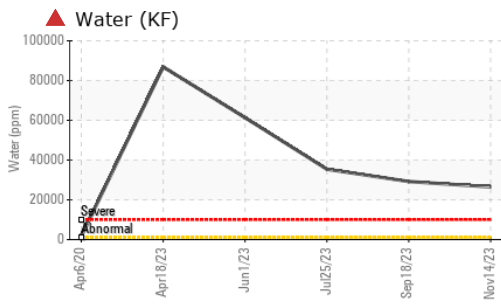
There is a high concentration of water present in the oil. Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

Silicon	ppm	ASTM D5185m	>50	▲ 1687	▲ 4047	▲ 2752
Potassium	ppm	ASTM D5185m	>20	128	329	219
Water	%	ASTM D6304	>0.1	▲ 2.65	▲ 2.92	▲ 3.54
ppm Water	ppm	ASTM D6304	>1000	▲ 26500	▲ 29200	▲ 35400
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	● HAZY
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	▲ 0.2%	▲ 0.2%	▲ 0.2%

FLUID CONDITION

The AN level is acceptable for this fluid. The oil is no longer serviceable due to the presence of contaminants.

Sodium	ppm	ASTM D5185m		36	98	60
Boron	ppm	ASTM D5185m		7	34	7
Barium	ppm	ASTM D5185m		4	10	0
Molybdenum	ppm	ASTM D5185m		0	0	<1
Manganese	ppm	ASTM D5185m		18	52	29
Magnesium	ppm	ASTM D5185m		421	1032	730
Calcium	ppm	ASTM D5185m		14673	11610	10000
Phosphorus	ppm	ASTM D5185m		933	1310	957
Zinc	ppm	ASTM D5185m		1087	1547	1090
Sulfur	ppm	ASTM D5185m		4790	9473	6168
Acid Number (AN)	mg KOH/g	ASTM D8045		1.42	1.34	1.37
Visc @ 40°C	cSt	ASTM D445		255	240	249
Visc @ 100°C	cSt	ASTM D445		18.8	19.07	20.9
Viscosity Index (VI)	Scale	ASTM D2270		80	89	98



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : TO10002857 **Received** : 20 Nov 2023
Lab Number : 06013421 **Tested** : 29 Nov 2023
Unique Number : 10752565 **Diagnosed** : 29 Nov 2023 - Jonathan Hester
Test Package : MOB 2 (Additional Tests: KF, KV100, PQ, 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)