



OIL ANALYSIS REPORT

WEAR
CONTAMINATION
FLUID CONDITION

ABNORMAL
MARGINAL
ATTENTION



Machine Id
CATERPILLAR Caterpillar 980 (S/N WFX01470)
Component
Diesel Engine
Fluid
TULCO LUBSOIL CK-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		TO10003612	---	---
Sample Date		Client Info		13 Jun 2024	---	---
Machine Age	hrs	Client Info		271	---	---
Oil Age	hrs	Client Info		271	---	---
Filter Age	hrs	Client Info		271	---	---
Oil Changed		Client Info		Not Chngd	---	---
Filter Changed		Client Info		Not Chngd	---	---
Sample Status				ABNORMAL	---	---

WEAR

The copper level is abnormal. In the absence of other significant wear metals, suspect copper due to sources other than wear (i.e. cooling core). All other metal levels are typical for a new component breaking in.

Iron	ppm	ASTM D5185m	>100	17	---	---
Chromium	ppm	ASTM D5185m	>20	0	---	---
Nickel	ppm	ASTM D5185m	>2	0	---	---
Titanium	ppm	ASTM D5185m	>2	0	---	---
Silver	ppm	ASTM D5185m	>2	<1	---	---
Aluminum	ppm	ASTM D5185m	>25	2	---	---
Lead	ppm	ASTM D5185m	>40	11	---	---
Copper	ppm	ASTM D5185m	>330	▲ 706	---	---
Tin	ppm	ASTM D5185m	>15	2	---	---
Vanadium	ppm	ASTM D5185m		0	---	---
White Metal	scalar	*Visual	NONE	LIGHT	---	---
Yellow Metal	scalar	*Visual	NONE	NONE	---	---

CONTAMINATION

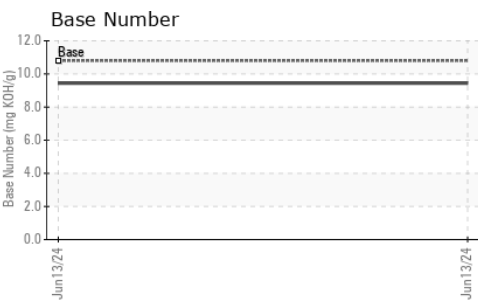
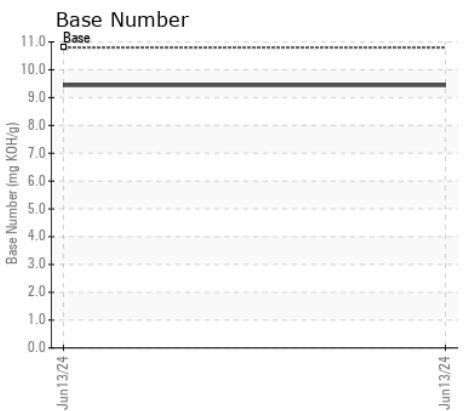
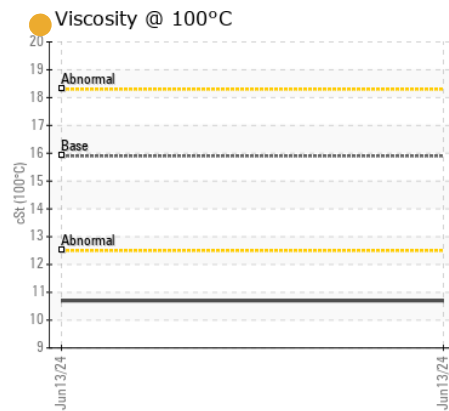
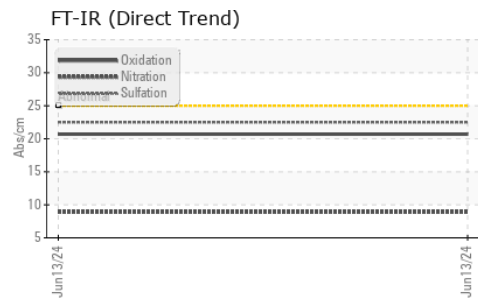
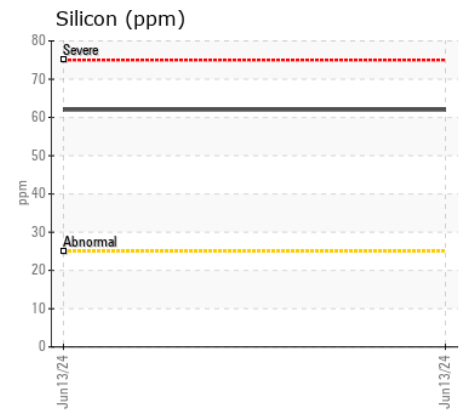
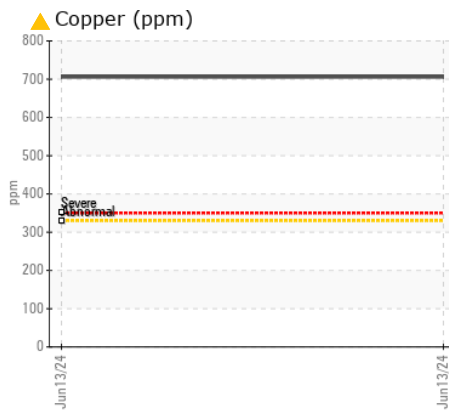
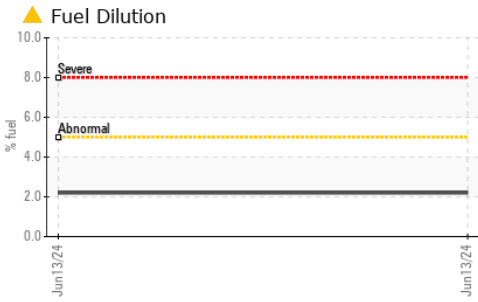
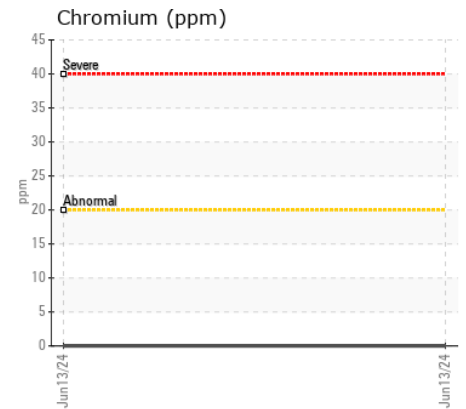
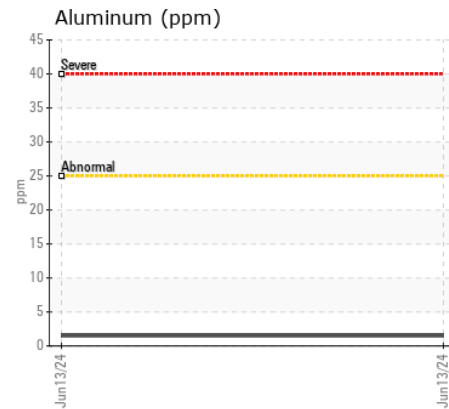
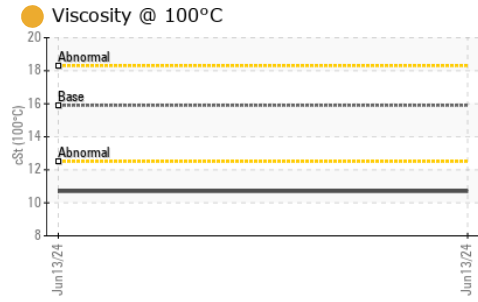
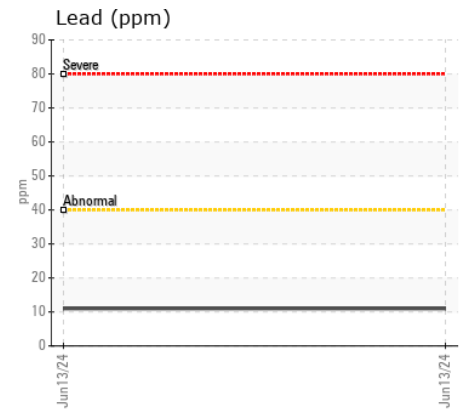
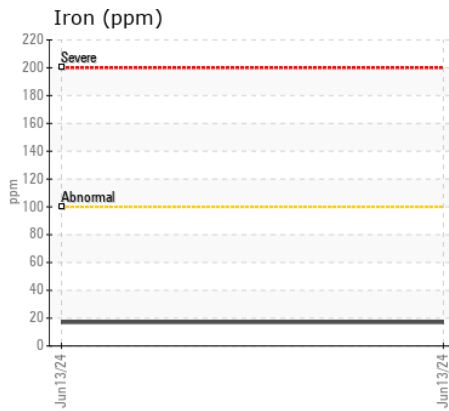
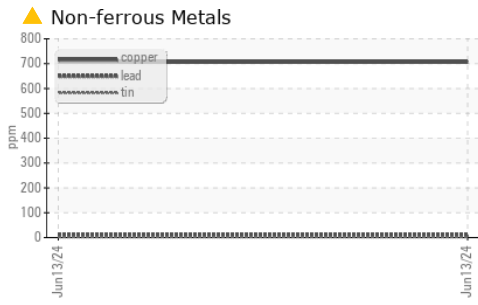
Light fuel dilution occurring.

Silicon	ppm	ASTM D5185m	>25	62	---	---
Potassium	ppm	ASTM D5185m	>20	0	---	---
Fuel	%	ASTM D3524	>5	▲ 2.2	---	---
Water		WC Method	>0.2	NEG	---	---
Glycol		WC Method		NEG	---	---
Soot %	%	*ASTM D7844	>3	0.2	---	---
Nitration	Abs/cm	*ASTM D7624	>20	8.9	---	---
Sulfation	Abs/.1mm	*ASTM D7415	>30	22.5	---	---
Silt	scalar	*Visual	NONE	NONE	---	---
Debris	scalar	*Visual	NONE	NONE	---	---
Sand/Dirt	scalar	*Visual	NONE	NONE	---	---
Appearance	scalar	*Visual	NORML	NORML	---	---
Odor	scalar	*Visual	NORML	NORML	---	---
Emulsified Water	scalar	*Visual	>0.2	NEG	---	---

FLUID CONDITION

The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

Sodium	ppm	ASTM D5185m		3	---	---
Boron	ppm	ASTM D5185m		35	---	---
Barium	ppm	ASTM D5185m		2	---	---
Molybdenum	ppm	ASTM D5185m	65	43	---	---
Manganese	ppm	ASTM D5185m		3	---	---
Magnesium	ppm	ASTM D5185m	1060	637	---	---
Calcium	ppm	ASTM D5185m	1140	1755	---	---
Phosphorus	ppm	ASTM D5185m	1170	965	---	---
Zinc	ppm	ASTM D5185m	1230	1153	---	---
Sulfur	ppm	ASTM D5185m	3130	3550	---	---
Oxidation	Abs/.1mm	*ASTM D7414	>25	20.7	---	---
Base Number (BN)	mg KOH/g	ASTM D2896	10.8	9.44	---	---
Visc @ 100°C	cSt	ASTM D445	15.9	● 10.7	---	---
Viscosity Index (VI)	Scale	ASTM D2270	143	145	---	---



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : TO10003612 **Received** : 18 Jun 2024
Lab Number : 06213661 **Tested** : 20 Jun 2024
Unique Number : 11086525 **Diagnosed** : 21 Jun 2024 - Jonathan Hester
Test Package : MOB 2 (Additional Tests: FuelDilution, PercentFuel, 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)