

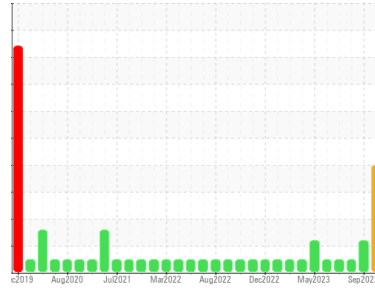


OIL ANALYSIS REPORT



Area
RIG 1
Machine Id
CATERPILLAR 3512 R1-G-01
Component
Diesel Engine
Fluid
CHEVRON 15W40 (--- GAL)

Sample Rating Trend



FUEL



DIAGNOSIS

Recommendation

We advise that you check the fuel injection system. We recommend that you drain the oil and perform a filter service on this component if not already done. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

There is a moderate amount of particulates present in the oil. There is a high amount of fuel present in the oil.

Fluid Condition

Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable due to the presence of contaminants.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		KL0013126	KL0012902	KL0012537
Sample Date	Client Info		03 Nov 2023	29 Sep 2023	25 Aug 2023
Machine Age	days	Client Info	45233	45196	45162
Oil Age	days	Client Info	0	0	0
Oil Changed	Client Info		N/A	N/A	N/A
Sample Status			SEVERE	ABNORMAL	NORMAL

CONTAMINATION

	method	limit/base	current	history1	history2
Water	WC Method	>0.2	NEG	NEG	NEG
Glycol	WC Method		NEG	NEG	NEG

WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m >100	2	2	2
Chromium	ppm	ASTM D5185m >20	0	0	0
Nickel	ppm	ASTM D5185m >2	0	<1	0
Titanium	ppm	ASTM D5185m >2	0	0	<1
Silver	ppm	ASTM D5185m >2	0	0	0
Aluminum	ppm	ASTM D5185m >25	4	0	<1
Lead	ppm	ASTM D5185m >40	0	<1	<1
Copper	ppm	ASTM D5185m >330	<1	<1	<1
Tin	ppm	ASTM D5185m >15	<1	<1	<1
Vanadium	ppm	ASTM D5185m	0	0	<1
Cadmium	ppm	ASTM D5185m	0	0	<1

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	301	418	348
Barium	ppm	ASTM D5185m	0	2	0
Molybdenum	ppm	ASTM D5185m	108	134	118
Manganese	ppm	ASTM D5185m	<1	<1	<1
Magnesium	ppm	ASTM D5185m	591	617	654
Calcium	ppm	ASTM D5185m	1314	1435	1516
Phosphorus	ppm	ASTM D5185m	615	707	647
Zinc	ppm	ASTM D5185m	727	781	789
Sulfur	ppm	ASTM D5185m	2172	2665	2785

CONTAMINANTS

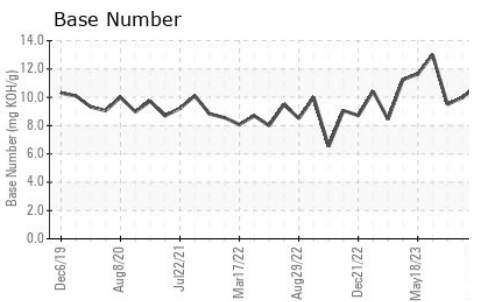
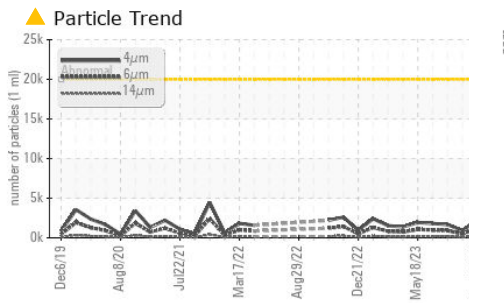
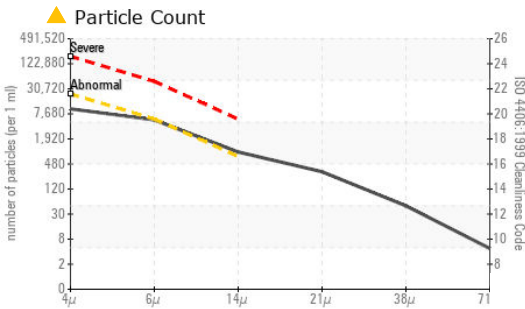
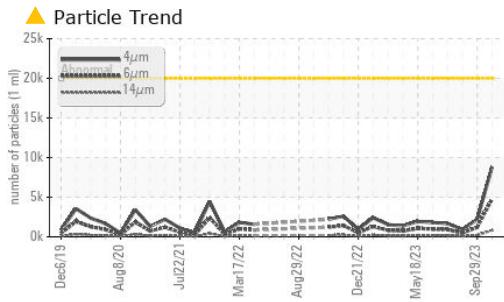
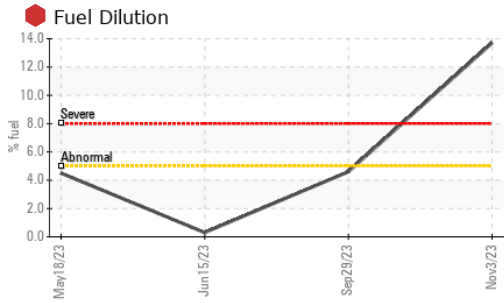
	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >25	9	5	4
Sodium	ppm	ASTM D5185m >50	<1	0	<1
Potassium	ppm	ASTM D5185m >20	0	1	1
Fuel	%	ASTM D3524 >5	13.7	4.6	<1.0

INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844 >3	0.1	0.1	0.1
Nitration	Abs/cm	*ASTM D7624 >20	6.5	4.7	5.7
Sulfation	Abs./1mm	*ASTM D7415 >30	21.9	21.6	22.6



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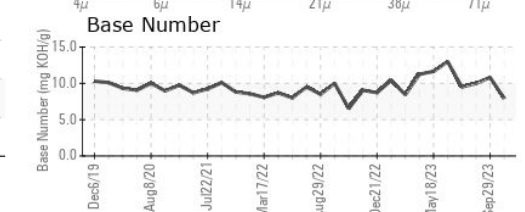
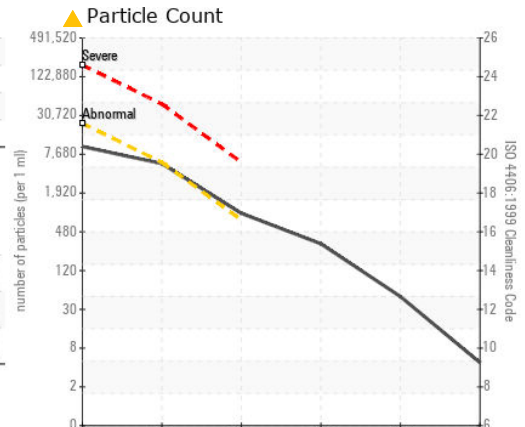
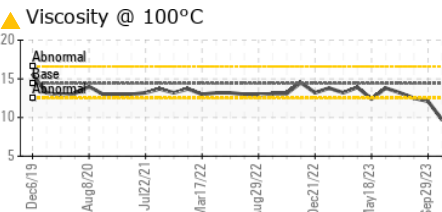
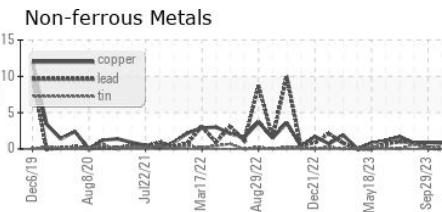
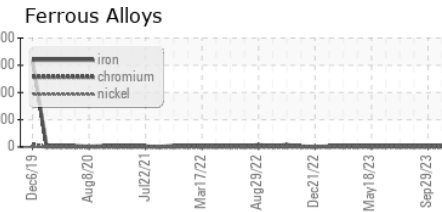
FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>20000	8804	2210	905
Particles >6µm	ASTM D7647	>5000	4796	1204	493
Particles >14µm	ASTM D7647	>640	▲ 816	205	84
Particles >21µm	ASTM D7647	>160	▲ 275	69	28
Particles >38µm	ASTM D7647	>40	▲ 42	11	4
Particles >71µm	ASTM D7647	>10	4	1	0
Oil Cleanliness	ISO 4406 (c)	>21/19/16	▲ 20/19/17	18/17/15	17/16/14

FLUID DEGRADATION	method	limit/base	current	history1	history2
Oxidation	Abs./1mm *ASTM D7414	>25	15.3	14.6	15.6
Base Number (BN)	mg KOH/g ASTM D2896		7.92	10.82	9.98

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	>0.2	NEG	NEG	NEG
Free Water	scalar *Visual		NEG	NEG	NEG

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt ASTM D445	14.4	▲ 9.7	▲ 12.1	12.5

GRAPHS



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : KL0013126 **Received** : 16 Nov 2023
Lab Number : 06010279 **Diagnosed** : 22 Nov 2023
Unique Number : 10749423 **Diagnostician** : Don Baldrige
Test Package : MOB 2 (Additional Tests: PercentFuel, PrtCount)

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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)