MOB II WEAR CHECK

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	ATTENTION
FLUID CONDITION	NORMAL

Area
RIG 5
Machine Id
CATERPILLAR 3512 R5-G-03 NKL
Component
Diesel Engine
Fluid
{not provided} (--- GAL)

RECOMMENDATION

No corrective action is recommended at this time. Resample at the next service interval to monitor.

WEAR

All component wear rates are normal.

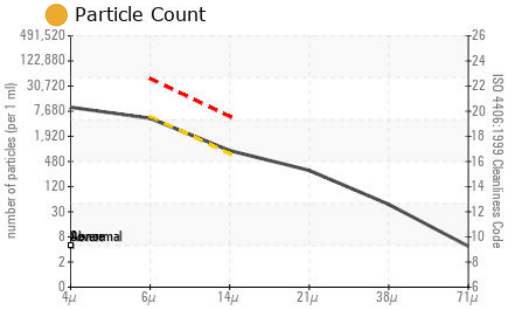
CONTAMINATION

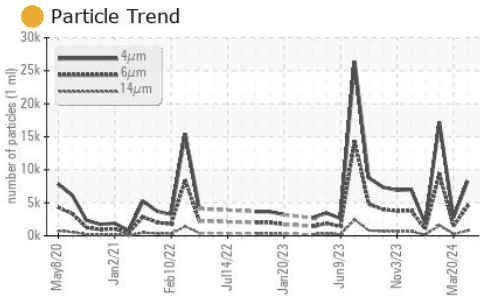
There is a moderate amount of particulates present in the oil.

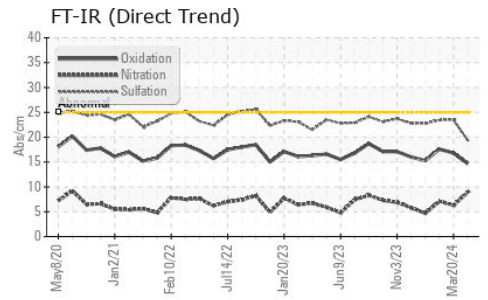
FLUID CONDITION

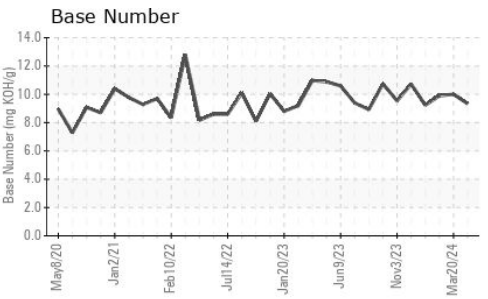
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

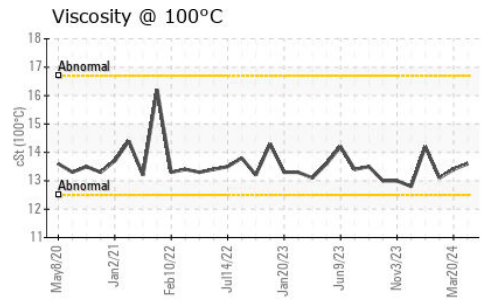
Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		KL0014247	KL0013864	KL0013841
Sample Date		Client Info		10 May 2024	20 Mar 2024	16 Feb 2024
Machine Age	days	Client Info		45412	45326	45338
Oil Age	days	Client Info		0	0	0
Filter Age	days	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Filter Changed		Client Info		N/A	N/A	N/A
Sample Status				ATTENTION	NORMAL	ABNORMAL
Iron	ppm	ASTM D5185m	>100	6	4	<1
Chromium	ppm	ASTM D5185m	>20	<1	0	<1
Nickel	ppm	ASTM D5185m	>2	<1	0	0
Titanium	ppm	ASTM D5185m	>2	21	<1	0
Silver	ppm	ASTM D5185m	>2	1	0	0
Aluminum	ppm	ASTM D5185m	>25	3	3	4
Lead	ppm	ASTM D5185m	>40	<1	0	<1
Copper	ppm	ASTM D5185m	>330	2	1	1
Tin	ppm	ASTM D5185m	>15	<1	0	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
White Metal	scalar	*Visual	NONE	NONE	LIGHT	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Silicon	ppm	ASTM D5185m	>25	7	12	5
Potassium	ppm	ASTM D5185m	>20	5	3	<1
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>3	0.2	0.1	0.2
Nitration	Abs/cm	*ASTM D7624	>20	8.9	6.3	7.1
Sulfation	Abs/.1mm	*ASTM D7415	>30	19.4	23.5	23.4
Particles >4µm		ASTM D7647		8300	2740	17225
Particles >6µm		ASTM D7647	>5000	4521	1493	▲ 9384
Particles >14µm		ASTM D7647	>640	● 769	254	▲ 1597
Particles >21µm		ASTM D7647	>160	● 259	86	▲ 538
Particles >38µm		ASTM D7647	>40	40	13	▲ 83
Particles >71µm		ASTM D7647	>10	4	1	8
Oil Cleanliness		ISO 4406 (c)	>19/16	● 19/17	18/15	▲ 20/18
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
Sodium	ppm	ASTM D5185m		4	1	<1
Boron	ppm	ASTM D5185m		160	428	321
Barium	ppm	ASTM D5185m		1	0	0
Molybdenum	ppm	ASTM D5185m		60	132	122
Manganese	ppm	ASTM D5185m		<1	0	<1
Magnesium	ppm	ASTM D5185m		1096	635	665
Calcium	ppm	ASTM D5185m		2175	1555	1489
Phosphorus	ppm	ASTM D5185m		969	767	717
Zinc	ppm	ASTM D5185m		1207	819	854
Sulfur	ppm	ASTM D5185m		4388	2670	2459
Oxidation	Abs/.1mm	*ASTM D7414	>25	14.7	16.8	17.6
Base Number (BN)	mg KOH/g	ASTM D2896		9.34	10.00	9.90
Visc @ 100°C	cSt	ASTM D445		13.6	13.4	13.1

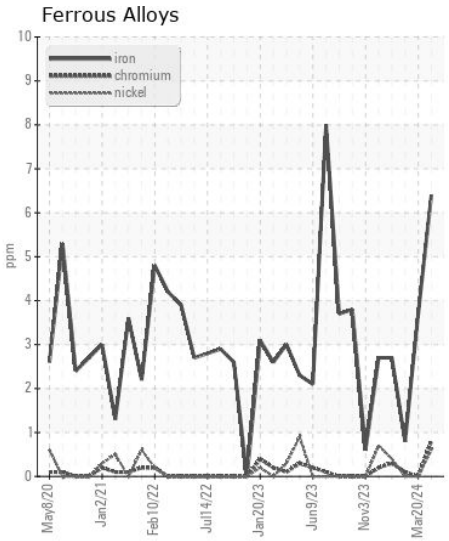


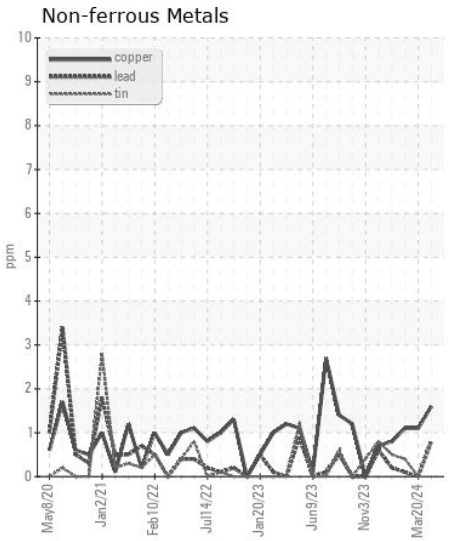


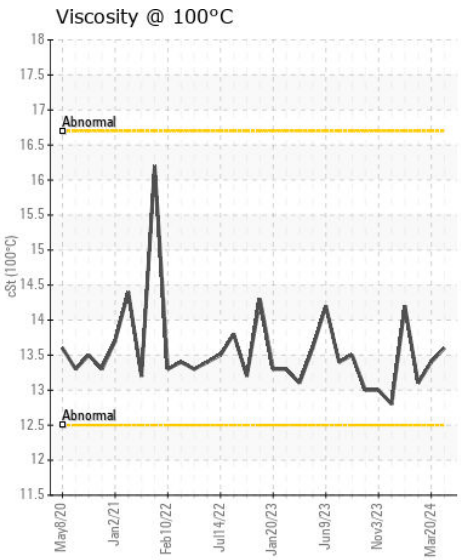


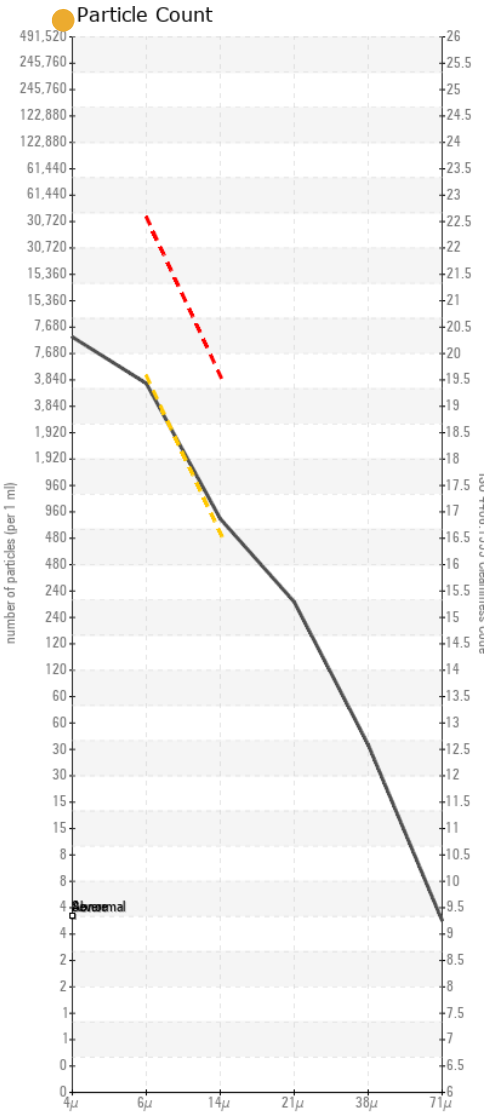


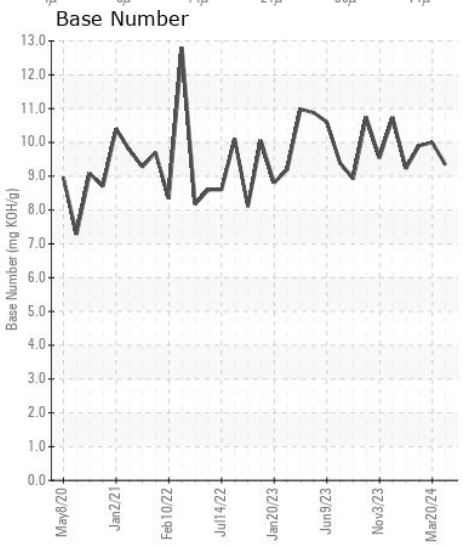












Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : KL0014247
Lab Number : 06191203
Unique Number : 11047955
Test Package : MOB 2 (Additional Tests: PrtCount)

Received : 24 May 2024
Tested : 30 May 2024
Diagnosed : 30 May 2024 - Angela Borella

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)

CITADEL DRILLING
7550 W I20
ODESSA, TX
US 79763
Contact: MIKE COMBDEN
mcombden@citadeldrilling.com
T: (780)955-5509
F: