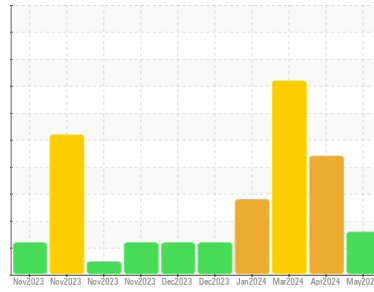




OIL ANALYSIS REPORT

Area
RIG 816
 Machine Id
R816-MP-02
 Component
Gearbox
 Fluid
GEAR OIL ISO 320 (--- GAL)

Sample Rating Trend



VISCOSITY



DIAGNOSIS

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

Fluid Condition

The oil viscosity is lower than normal. Confirm oil type. The AN level is acceptable for this fluid.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		KL0014289	KL0014297	KL0013734
Sample Date	Client Info		07 May 2024	03 Apr 2024	05 Mar 2024
Machine Age	hrs	Client Info	0	0	0
Oil Age	hrs	Client Info	0	0	0
Oil Changed	Client Info		N/A	N/A	N/A
Sample Status			ABNORMAL	ABNORMAL	ABNORMAL

CONTAMINATION

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

WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m >200	44	91	▲ 279
Chromium	ppm	ASTM D5185m >10	0	<1	2
Nickel	ppm	ASTM D5185m >10	0	0	<1
Titanium	ppm	ASTM D5185m	<1	0	1
Silver	ppm	ASTM D5185m	<1	0	0
Aluminum	ppm	ASTM D5185m >25	9	● 12	● 23
Lead	ppm	ASTM D5185m >50	0	0	0
Copper	ppm	ASTM D5185m >200	38	43	47
Tin	ppm	ASTM D5185m >10	0	0	0
Vanadium	ppm	ASTM D5185m	<1	0	0
Cadmium	ppm	ASTM D5185m	0	0	0

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m 50	0	0	<1
Barium	ppm	ASTM D5185m 15	5	16	26
Molybdenum	ppm	ASTM D5185m 15	0	0	<1
Manganese	ppm	ASTM D5185m	<1	1	3
Magnesium	ppm	ASTM D5185m 50	3	12	18
Calcium	ppm	ASTM D5185m 50	84	117	194
Phosphorus	ppm	ASTM D5185m 350	134	135	149
Zinc	ppm	ASTM D5185m 100	35	26	46
Sulfur	ppm	ASTM D5185m 12500	8627	8263	8507

CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >50	30	▲ 52	▲ 101
Sodium	ppm	ASTM D5185m	100	508	957
Potassium	ppm	ASTM D5185m >20	6	15	46

FLUID CLEANLINESS

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>20000	▲ 128683	▲ 183224	▲ 36765
Particles >6µm	ASTM D7647	>5000	▲ 26884	▲ 96764	▲ 20028
Particles >14µm	ASTM D7647	>640	114	▲ 753	▲ 3408
Particles >21µm	ASTM D7647	>160	6	47	▲ 1148
Particles >38µm	ASTM D7647	>40	0	1	▲ 177
Particles >71µm	ASTM D7647	>10	0	0	▲ 18
Oil Cleanliness	ISO 4406 (c)	>21/19/16	▲ 24/22/14	▲ 25/24/17	▲ 22/22/19

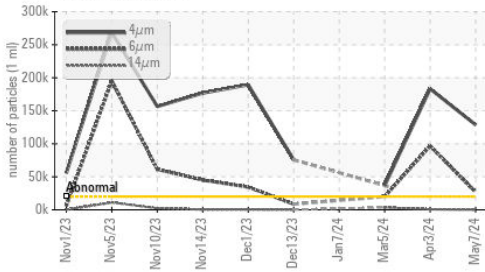
FLUID DEGRADATION

	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045 0.85	0.30	0.31	0.42

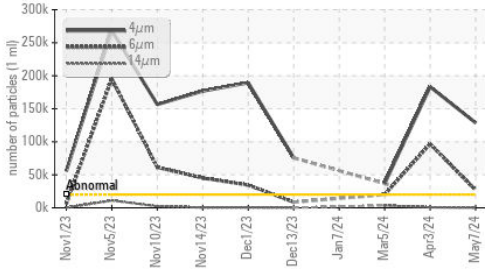


OIL ANALYSIS REPORT

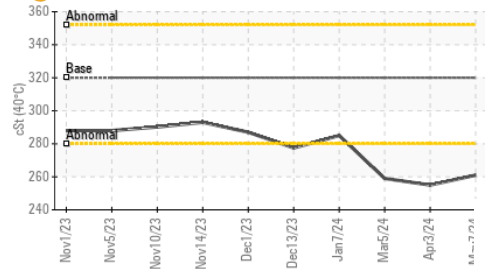
Particle Trend



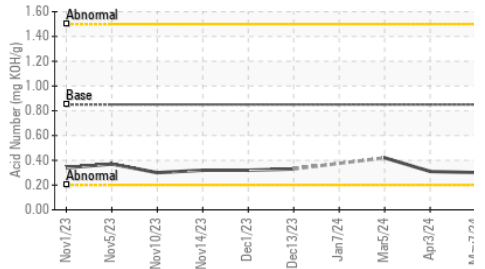
Particle Trend



Viscosity @ 40°C



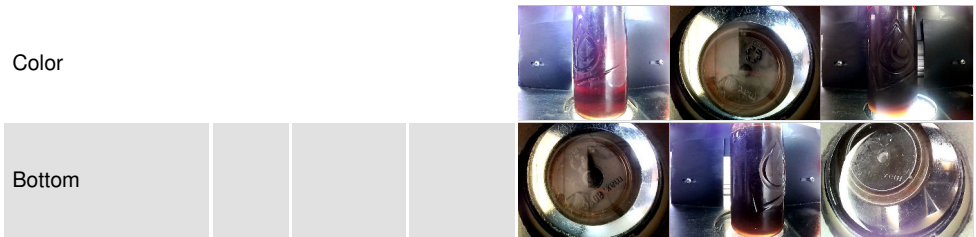
Acid Number



VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	LIGHT
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	HAZY
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

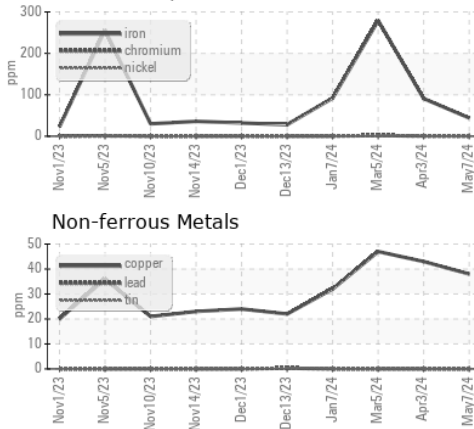
FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	320	261	255

SAMPLE IMAGES	method	limit/base	current	history1	history2
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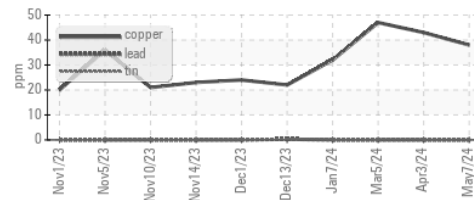


GRAPHS

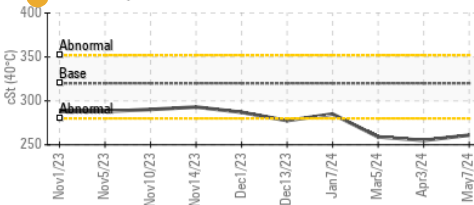
Ferrous Alloys



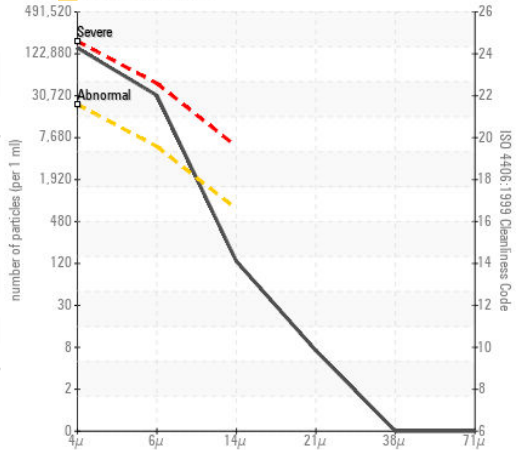
Non-ferrous Metals



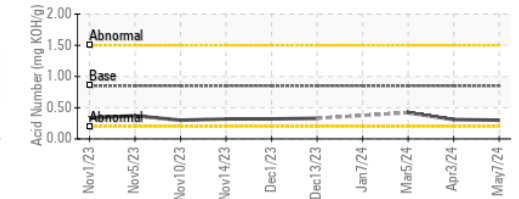
Viscosity @ 40°C



Particle Count



Acid Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : KL0014289

Lab Number : 06181300

Unique Number : 11032626

Test Package : MOB 2 (Additional Tests: PrtCount)

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)

Received : 16 May 2024

Tested : 17 May 2024

Diagnosed : 20 May 2024 - Jonathan Hester

PATTERSON - UTI DRILLING

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US 79706

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