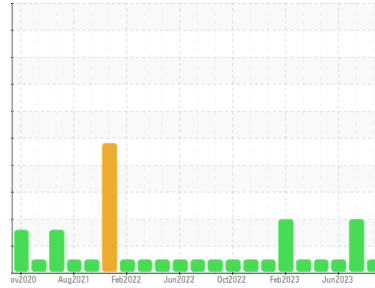




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area
RIG 6
 Machine Id
R6-G-01
 Component
Diesel Engine
 Fluid
NOT GIVEN (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

The amount and size of particulates present in the system are acceptable. There is no indication of any contamination 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.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		KL0012962	KL0012548	KL0012525
Sample Date	Client Info		15 Sep 2023	28 Jul 2023	24 Jun 2023
Machine Age	days	Client Info	45180	45134	45099
Oil Age	days	Client Info	0	0	0
Oil Changed	Client Info		N/A	N/A	N/A
Sample Status			NORMAL	ATTENTION	NORMAL

CONTAMINATION

	method	limit/base	current	history1	history2
Fuel	WC Method	>5	<1.0	<1.0	<1.0
Glycol	WC Method		NEG	NEG	NEG

WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m >100	3	7	6
Chromium	ppm	ASTM D5185m >20	0	<1	<1
Nickel	ppm	ASTM D5185m >4	0	<1	0
Titanium	ppm	ASTM D5185m	0	0	0
Silver	ppm	ASTM D5185m >3	0	0	0
Aluminum	ppm	ASTM D5185m >20	7	5	3
Lead	ppm	ASTM D5185m >40	0	<1	<1
Copper	ppm	ASTM D5185m >330	<1	2	2
Tin	ppm	ASTM D5185m >15	0	0	<1
Vanadium	ppm	ASTM D5185m	0	<1	0
Cadmium	ppm	ASTM D5185m	0	0	0

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	414	252	355
Barium	ppm	ASTM D5185m	0	0	0
Molybdenum	ppm	ASTM D5185m	134	144	146
Manganese	ppm	ASTM D5185m	0	<1	<1
Magnesium	ppm	ASTM D5185m	714	702	763
Calcium	ppm	ASTM D5185m	1652	1646	1780
Phosphorus	ppm	ASTM D5185m	740	713	784
Zinc	ppm	ASTM D5185m	900	908	929
Sulfur	ppm	ASTM D5185m	2633	2615	3249

CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >25	12	5	6
Sodium	ppm	ASTM D5185m	<1	3	2
Potassium	ppm	ASTM D5185m >20	0	1	2

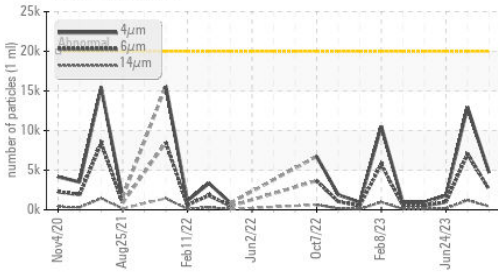
INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844 >3	0.2	0.3	0.2
Nitration	Abs/cm	*ASTM D7624 >20	6.8	9.7	9.2
Sulfation	Abs/.1mm	*ASTM D7415 >30	22.7	25.2	24.6

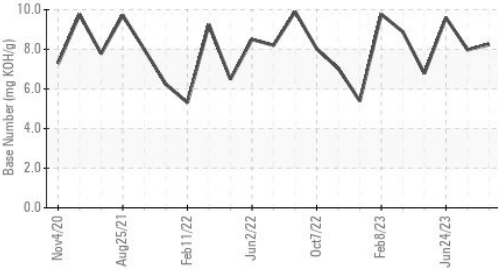


OIL ANALYSIS REPORT

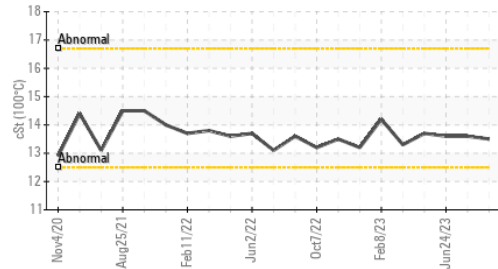
Particle Trend



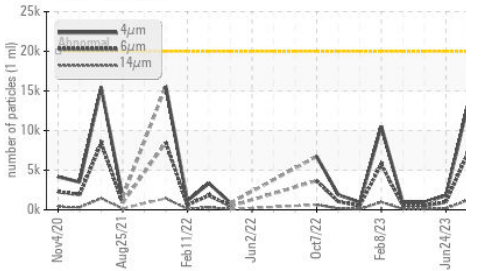
Base Number



Viscosity @ 100°C



Particle Trend



FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>20000	4689	12954	1818
Particles >6µm	ASTM D7647	>5000	2554	▲ 7057	990
Particles >14µm	ASTM D7647	>640	435	▲ 1201	169
Particles >21µm	ASTM D7647	>160	146	▲ 405	57
Particles >38µm	ASTM D7647	>40	23	▲ 62	9
Particles >71µm	ASTM D7647	>10	2	6	1
Oil Cleanliness	ISO 4406 (c)	>21/19/16	19/19/16	▲ 21/20/17	18/17/15

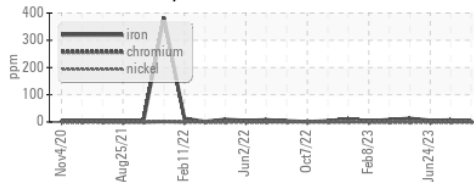
FLUID DEGRADATION	method	limit/base	current	history1	history2	
Oxidation	Abs/.1mm	*ASTM D7414	>25	16.5	21.6	20.7
Base Number (BN)	mg KOH/g	ASTM D2896		8.24	7.98	9.60

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

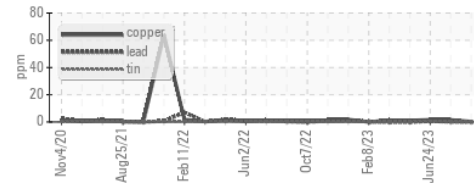
FLUID PROPERTIES	method	limit/base	current	history1	history2	
Visc @ 100°C	cSt	ASTM D445		13.5	13.6	13.6

GRAPHS

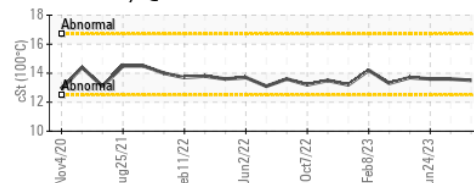
Ferrous Alloys



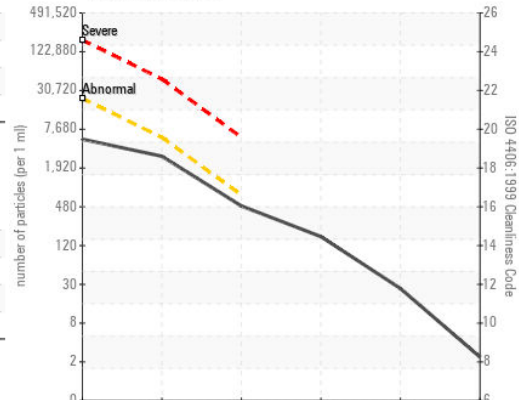
Non-ferrous Metals



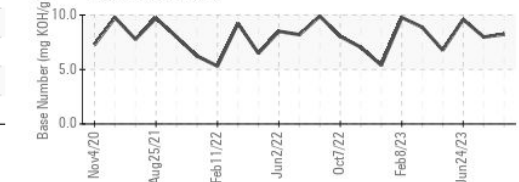
Viscosity @ 100°C



Particle Count



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : KL0012962 **Received** : 29 Sep 2023
Lab Number : 05965527 **Diagnosed** : 04 Oct 2023
Unique Number : 10672078 **Diagnostician** : Jonathan Hester
Test Package : MOB 2 (Additional Tests: PrtCount)

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 ODESSA, TX
 US 79763
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 mcombden@citadelldrilling.com
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 F:

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)