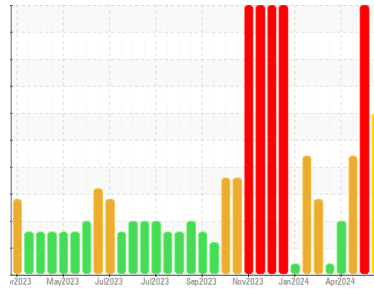




# OIL ANALYSIS REPORT

Sample Rating Trend



**WATER**



Area  
**RIG 879**  
 Machine Id  
**R879-MP-01**  
 Component  
**Gearbox**

Fluid  
**BRENNTAG COASTAL CHEMICAL HBC GEAR OIL 320 (--- GAL)**

## DIAGNOSIS

### Recommendation

We recommend you service the filters on this component. We recommend an early resample to monitor this condition.

### Wear

Gear wear is indicated.

### Contamination

Appearance is hazy. There is a high amount of particulates present in the oil. There is a light concentration of water present in the oil.

### Fluid Condition

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

## SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		<b>KL0014470</b>	KL0014479	KL0014320
Sample Date	Client Info		<b>03 Jul 2024</b>	11 Jun 2024	07 May 2024
Machine Age	days	Client Info	<b>0</b>	0	0
Oil Age	days	Client Info	<b>0</b>	0	0
Oil Changed	Client Info		<b>N/A</b>	N/A	N/A
Sample Status			<b>ABNORMAL</b>	SEVERE	SEVERE

## WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m >200	<b>502</b>	1340	38
Chromium	ppm	ASTM D5185m >10	<b>6</b>	16	0
Nickel	ppm	ASTM D5185m >10	<b>0</b>	2	0
Titanium	ppm	ASTM D5185m	<b>&lt;1</b>	<1	<1
Silver	ppm	ASTM D5185m	<b>0</b>	0	<1
Aluminum	ppm	ASTM D5185m >25	<b>3</b>	8	4
Lead	ppm	ASTM D5185m >50	<b>0</b>	<1	0
Copper	ppm	ASTM D5185m >200	<b>13</b>	14	5
Tin	ppm	ASTM D5185m >10	<b>0</b>	2	0
Vanadium	ppm	ASTM D5185m	<b>0</b>	<1	<1
Cadmium	ppm	ASTM D5185m	<b>0</b>	<1	0

## ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	<b>1</b>	19	0
Barium	ppm	ASTM D5185m	<b>13</b>	26	39
Molybdenum	ppm	ASTM D5185m	<b>3</b>	4	1
Manganese	ppm	ASTM D5185m	<b>3</b>	8	<1
Magnesium	ppm	ASTM D5185m	<b>19</b>	79	3
Calcium	ppm	ASTM D5185m	<b>94</b>	187	27
Phosphorus	ppm	ASTM D5185m	<b>135</b>	197	119
Zinc	ppm	ASTM D5185m	<b>50</b>	93	42
Sulfur	ppm	ASTM D5185m	<b>9681</b>	11478	9719

## CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >50	<b>24</b>	40	22
Sodium	ppm	ASTM D5185m	<b>295</b>	471	14
Potassium	ppm	ASTM D5185m >20	<b>4</b>	13	2
Water	%	ASTM D6304 >0.2	<b>0.232</b>	2.13	---
ppm Water	ppm	ASTM D6304 >2000	<b>2320</b>	21300	---

## FLUID CLEANLINESS

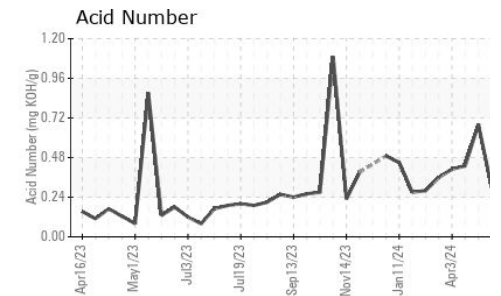
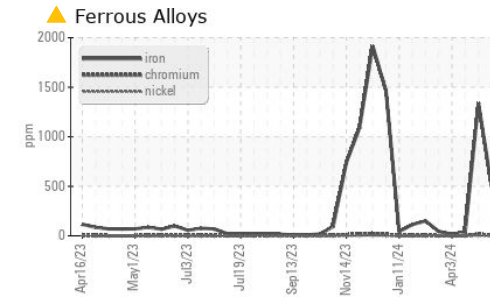
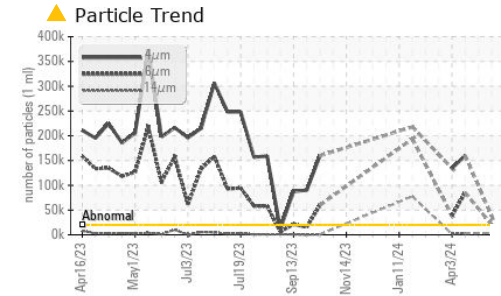
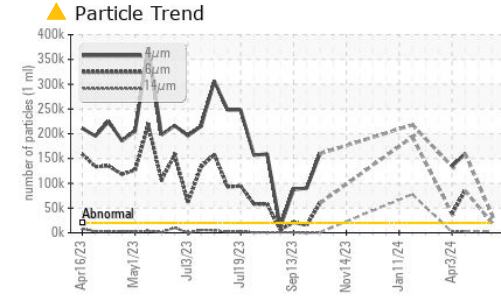
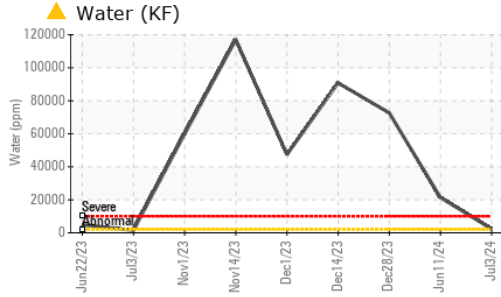
	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>20000	<b>38209</b>	---	160120
Particles >6µm	ASTM D7647	>5000	<b>20815</b>	---	85076
Particles >14µm	ASTM D7647	>640	<b>3542</b>	---	2681
Particles >21µm	ASTM D7647	>160	<b>1193</b>	---	245
Particles >38µm	ASTM D7647	>40	<b>184</b>	---	1
Particles >71µm	ASTM D7647	>10	<b>19</b>	---	0
Oil Cleanliness	ISO 4406 (c)	>21/19/16	<b>22/22/19</b>	---	25/24/19

## FLUID DEGRADATION

	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	<b>0.30</b>	0.68	0.43



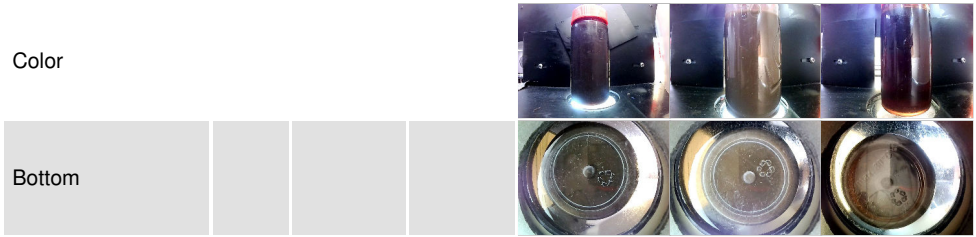
# OIL ANALYSIS REPORT



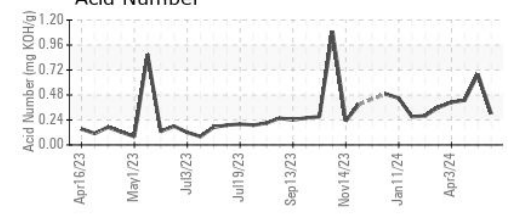
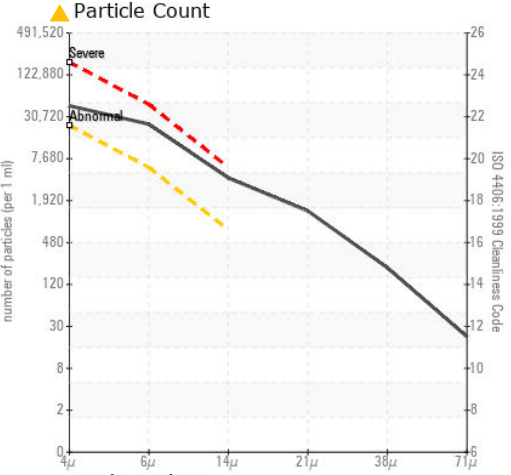
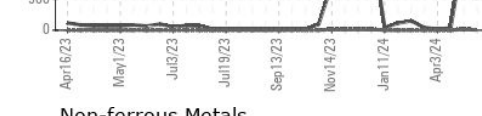
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	MODER	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance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

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	310	286	309

SAMPLE IMAGES	method	limit/base	current	history1	history2
---------------	--------	------------	---------	----------	----------



## GRAPHS



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : KL0014470  
**Lab Number** : 06234864  
**Unique Number** : 11123698  
**Test Package** : MOB 2 ( Additional Tests: KF, PrtCount )  
**Received** : 12 Jul 2024  
**Tested** : 18 Jul 2024  
**Diagnosed** : 18 Jul 2024 - Jonathan Hester

**PATTERSON - UTI DRILLING**  
 9915 WEST INDUSTRIAL  
 MIDLAND, TX  
 US 79706  
 Contact: RICKY MATA  
 ricky.mata@patenergy.com  
 T: (832)219-4559  
 F: (432)561-9388

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)