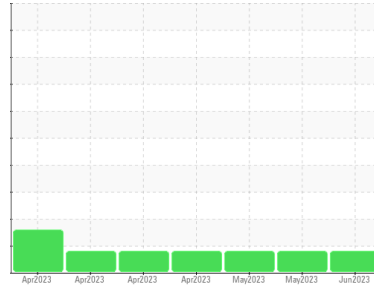




OIL ANALYSIS REPORT

Sample Rating Trend



ISO



Area
RIG 879
 Machine Id
R879-P-03

Component
Pump Drive
 Fluid
BRENNTAG COASTAL CHEMICAL HBC GEAR OIL 320 (--- GAL)

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 moderate amount of silt (particulates < 14 microns in size) 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	history 1	history 2	
Sample Number	Client Info	KL0012209	KL0012216	KL0012427	
Sample Date	Client Info	06 Jun 2023	23 May 2023	01 May 2023	
Machine Age	days	Client Info	45083	45069	45047
Oil Age	days	Client Info	0	0	15
Oil Changed	Client Info	N/A	N/A	N/A	
Sample Status		ATTENTION	ABNORMAL	ABNORMAL	

WEAR METALS

method	limit/base	current	history 1	history 2	
Iron	ppm	ASTM D5185m >500	2	11	13
Chromium	ppm	ASTM D5185m >15	0	0	0
Nickel	ppm	ASTM D5185m >10	0	0	0
Titanium	ppm	ASTM D5185m	<1	0	0
Silver	ppm	ASTM D5185m	0	0	0
Aluminum	ppm	ASTM D5185m >20	<1	4	2
Lead	ppm	ASTM D5185m	0	0	0
Copper	ppm	ASTM D5185m >35	<1	1	<1
Tin	ppm	ASTM D5185m >4	0	0	0
Vanadium	ppm	ASTM D5185m	0	0	0
Cadmium	ppm	ASTM D5185m	0	0	0

ADDITIVES

method	limit/base	current	history 1	history 2	
Boron	ppm	ASTM D5185m	0	1	0
Barium	ppm	ASTM D5185m	0	2	0
Molybdenum	ppm	ASTM D5185m	2	9	9
Manganese	ppm	ASTM D5185m	0	<1	<1
Magnesium	ppm	ASTM D5185m	0	7	5
Calcium	ppm	ASTM D5185m	91	439	496
Phosphorus	ppm	ASTM D5185m	59	48	40
Zinc	ppm	ASTM D5185m	11	18	4
Sulfur	ppm	ASTM D5185m	10151	10402	9969

CONTAMINANTS

method	limit/base	current	history 1	history 2	
Silicon	ppm	ASTM D5185m >75	6	13	12
Sodium	ppm	ASTM D5185m	8	24	44
Potassium	ppm	ASTM D5185m >20	0	<1	<1

FLUID CLEANLINESS

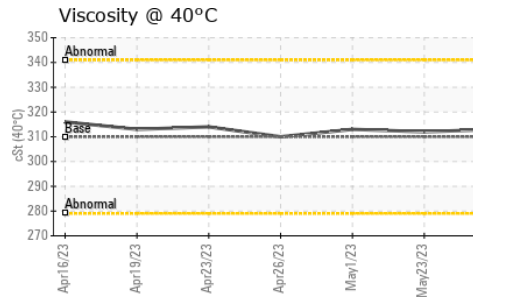
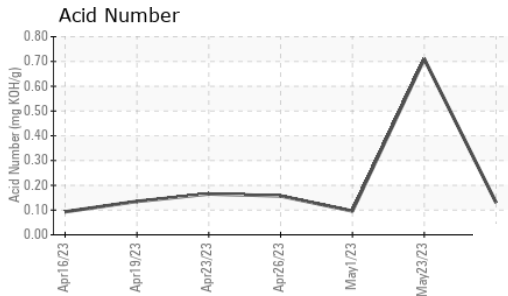
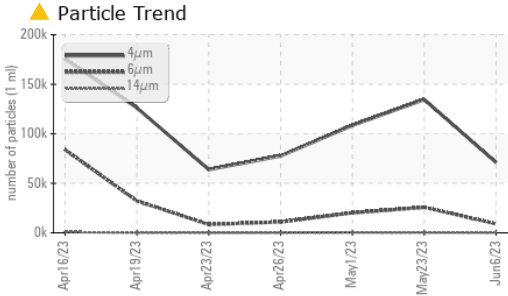
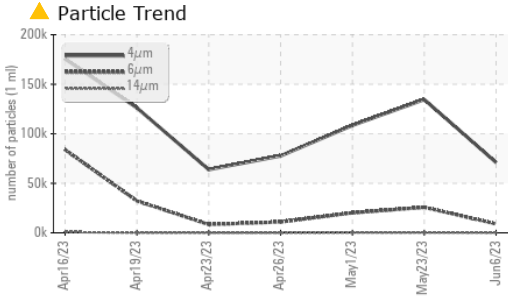
method	limit/base	current	history 1	history 2
Particles >4µm	ASTM D7647	71031	134567	108461
Particles >6µm	ASTM D7647 >5000	▲ 8962	▲ 25768	▲ 20216
Particles >14µm	ASTM D7647 >640	21	154	194
Particles >21µm	ASTM D7647 >160	1	8	21
Particles >38µm	ASTM D7647 >40	0	0	0
Particles >71µm	ASTM D7647 >10	0	0	0
Oil Cleanliness	ISO 4406 (c) >19/16	▲ 20/12	▲ 22/14	▲ 22/15

FLUID DEGRADATION

method	limit/base	current	history 1	history 2	
Acid Number (AN)	mg KOH/g	ASTM D8045	0.13	0.71	0.096



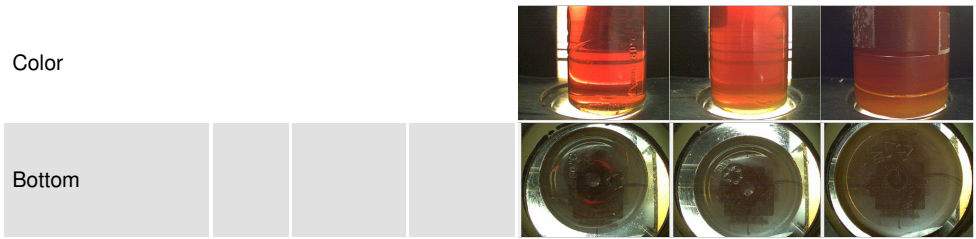
OIL ANALYSIS REPORT



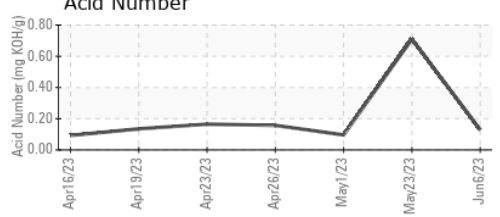
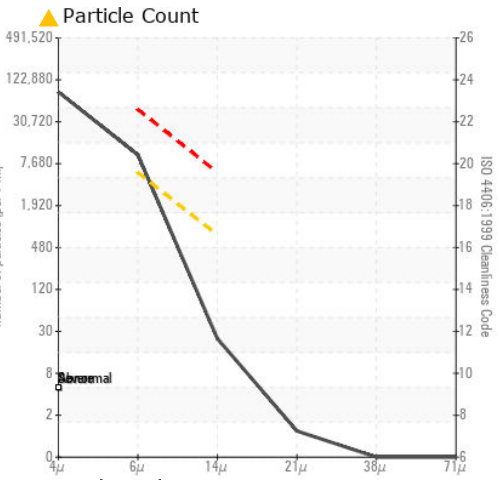
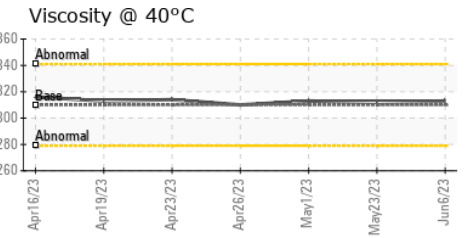
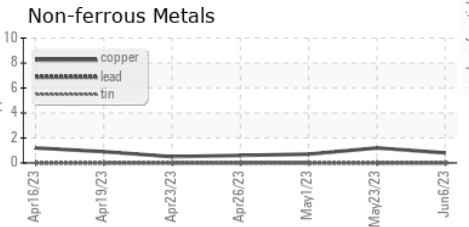
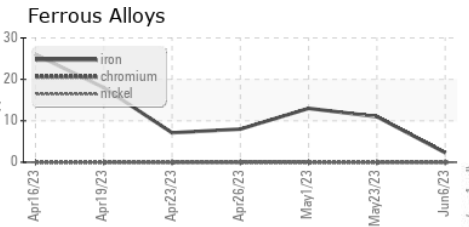
VISUAL	method	limit/base	current	history 1	history 2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
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	history 1	history 2
Visc @ 40°C	cSt	ASTM D445	310	313	312

SAMPLE IMAGES	method	limit/base	current	history 1	history 2
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GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : KL0012209 **Received** : 09 Jun 2023
Lab Number : 05870274 **Diagnosed** : 13 Jun 2023
Unique Number : 10510058 **Diagnostician** : Doug Bogart
Test Package : MOB 2 (Additional Tests: PrtCount)

PATTERSON - UTI DRILLING
 9915 WEST INDUSTRIAL
 MIDLAND, TX
 US 79706
 Contact: MICHEAL EASTMAN
 micheal.eastman@patenergy.com
 T: (325)716-8686
 F: (432)561-9388

Certificate L2367
 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)