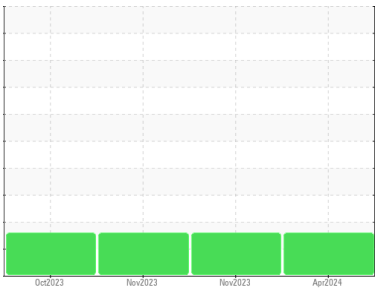
OIL ANALYSIS REPORT

Sample Rating Trend



WATER

Area
RRHP Intake Structure
Machine Id
029-000-310 RRHP Intake HPU
Component
Hydraulic System
Fluid
UCON TRIDENT AW HYDRAULIC FLUID 32 (300 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 light concentration of water present in the oil. The amount and size of particulates present in the system are acceptable.

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		**WC0879257**	WC0879256	WC0879255
Sample Date		Client Info		**03 Apr 2024**	03 Nov 2023	01 Nov 2023
Machine Age	hrs	Client Info		**0**	0	0
Oil Age	hrs	Client Info		**0**	0	0
Oil Changed		Client Info		**N/A**	N/A	Filtered
Sample Status				**MARGINAL**	MARGINAL	ABNORMAL

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>20	**1**	0	0
Chromium	ppm	ASTM D5185m	>20	**<1**	0	0
Nickel	ppm	ASTM D5185m	>20	**1**	0	0
Titanium	ppm	ASTM D5185m		**<1**	0	0
Silver	ppm	ASTM D5185m		**<1**	0	0
Aluminum	ppm	ASTM D5185m	>20	**1**	0	<1
Lead	ppm	ASTM D5185m	>20	**1**	0	0
Copper	ppm	ASTM D5185m	>20	**1**	<1	2
Tin	ppm	ASTM D5185m	>20	**1**	<1	1
Vanadium	ppm	ASTM D5185m		**<1**	<1	<1
Cadmium	ppm	ASTM D5185m		**1**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	**0**	0	0
Barium	ppm	ASTM D5185m	0	**4**	0	0
Molybdenum	ppm	ASTM D5185m	0	**<1**	0	0
Manganese	ppm	ASTM D5185m	0	**<1**	0	0
Magnesium	ppm	ASTM D5185m	0	**6**	0	0
Calcium	ppm	ASTM D5185m	0	**6**	0	0
Phosphorus	ppm	ASTM D5185m	150	**214**	180	199
Zinc	ppm	ASTM D5185m	0	**11**	0	0
Sulfur	ppm	ASTM D5185m	0	**0**	0	0

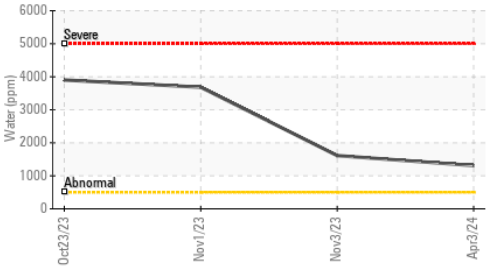
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>15	**2**	2	2
Sodium	ppm	ASTM D5185m		**3**	0	0
Potassium	ppm	ASTM D5185m	>20	**1**	1	1
Water	%	ASTM D6304	>0.05	▲ **0.131**	▲ 0.161	▲ 0.368
ppm Water	ppm	ASTM D6304	>500	▲ **1310**	▲ 1612	▲ 3683

FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>5000	**4093**	2185	132
Particles >6µm		ASTM D7647	>1300	**1019**	541	57
Particles >14µm		ASTM D7647	>160	**90**	63	8
Particles >21µm		ASTM D7647	>40	**25**	20	3
Particles >38µm		ASTM D7647	>10	**2**	1	1
Particles >71µm		ASTM D7647	>3	**0**	0	0
Oil Cleanliness		ISO 4406 (c)	>19/17/14	**19/17/14**	18/16/13	14/13/10

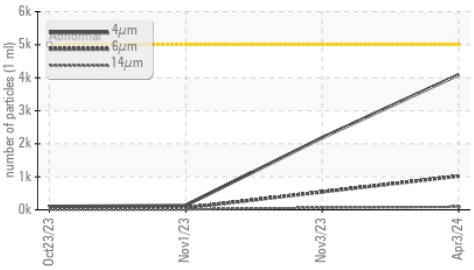
FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	0.37	**1.07**	0.90	0.80

OIL ANALYSIS REPORT

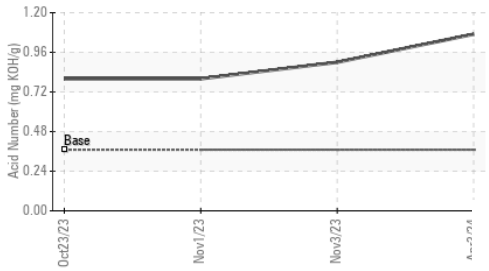
Water (KF)



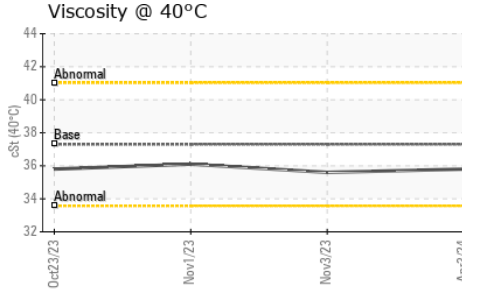
Particle Trend



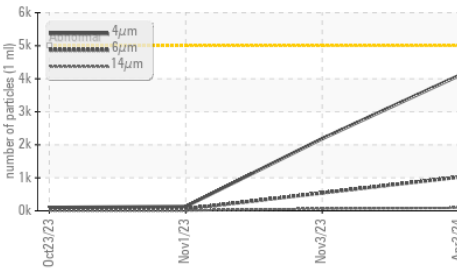
Acid Number



Viscosity @ 40°C

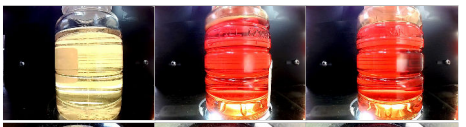


Particle Trend



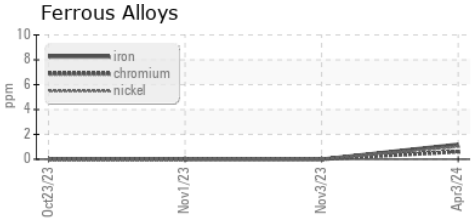
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Appearance	scalar	*Visual	NORML	**NORML**	NORML	NORML
Odor	scalar	*Visual	NORML	**NORML**	NORML	NORML
Emulsified Water	scalar	*Visual	>0.05	**NEG**	NEG	NEG
Free Water	scalar	*Visual		**NEG**	NEG	NEG

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	37.3	**35.8**	35.6	36.1

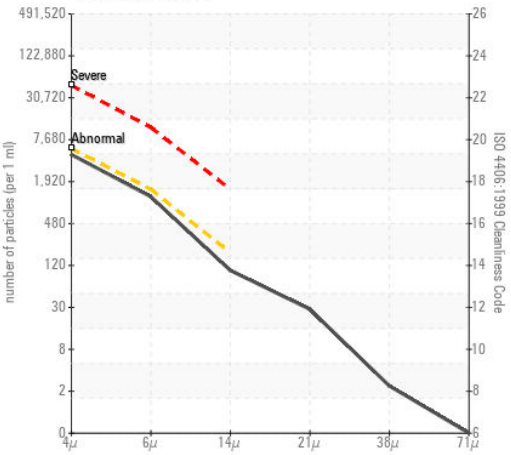
SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					

GRAPHS

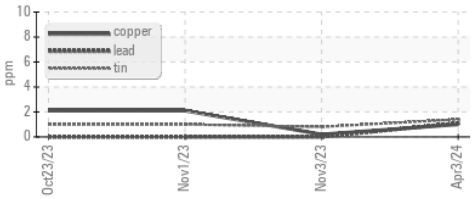
Ferrous Alloys



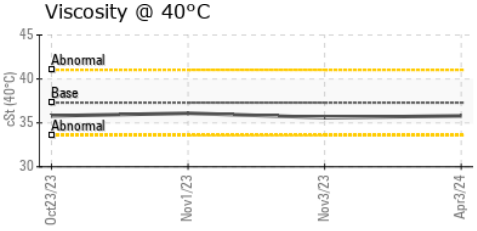
Particle Count



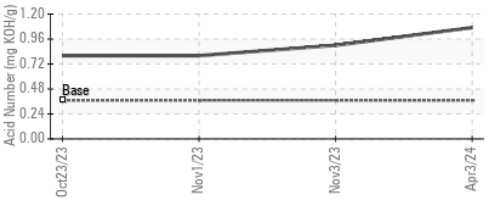
Non-ferrous Metals



Viscosity @ 40°C



Acid Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0879257
Lab Number : 06147328
Unique Number : 10977406
Test Package : IND 2 (Additional Tests: KF)

Received : 12 Apr 2024
Tested : 15 Apr 2024
Diagnosed : 16 Apr 2024 - Don Baldridge

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)

Missouri River Energy Services - Red Rock Hydro
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Pella, IA
CA 50219
Contact: Vern Cochran
vern.cochran@mrenergy.com
T: (605)357-6920
F:

Report Id: MISPEL [WUSCAR] 06147328 (Generated: 04/16/2024 11:03:53) Rev: 1

Submitted By: RRHP Pella Iowa - Vern Cochran