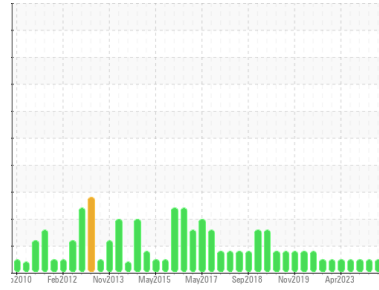




# OIL ANALYSIS REPORT

Sample Rating Trend



**NORMAL**



Area

**Black Eagle - PPLBUT**

Machine Id

**BLE01 - GENERATOR BEARING LUBRICATION (S/N 12281)**

Component

**Reservoir Lube System**

Fluid

**CONOCO MULTIPURPOSE R&O OIL ISO 68 (100 GAL)**

## DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor.

### Wear

All component wear rates are normal.

### Contamination

There is no indication of any contamination 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		<b>WC06196622</b>	WC0843454	WC0843405
Sample Date	Client Info		<b>18 May 2024</b>	29 Feb 2024	08 Nov 2023
Machine Age	hrs	Client Info	<b>0</b>	0	0
Oil Age	hrs	Client Info	<b>0</b>	0	0
Oil Changed	Client Info		<b>N/A</b>	N/A	N/A
Sample Status			<b>NORMAL</b>	NORMAL	NORMAL

## CONTAMINATION

	method	limit/base	current	history1	history2
Water	WC Method	>0.05	<b>NEG</b>	NEG	NEG

## WEAR METALS

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

## ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		<b>0</b>	0
Barium	ppm	ASTM D5185m		<b>0</b>	0
Molybdenum	ppm	ASTM D5185m		<b>0</b>	0
Manganese	ppm	ASTM D5185m		<b>0</b>	0
Magnesium	ppm	ASTM D5185m		<b>&lt;1</b>	<1
Calcium	ppm	ASTM D5185m		<b>2</b>	3
Phosphorus	ppm	ASTM D5185m		<b>23</b>	17
Zinc	ppm	ASTM D5185m		<b>9</b>	0
Sulfur	ppm	ASTM D5185m		<b>5</b>	0

## CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>15	<b>&lt;1</b>	1
Sodium	ppm	ASTM D5185m		<b>&lt;1</b>	0
Potassium	ppm	ASTM D5185m	>20	<b>0</b>	<1

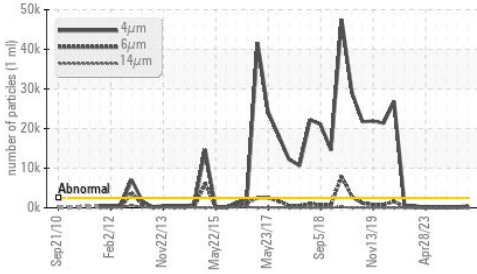
## FLUID CLEANLINESS

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>2500	<b>468</b>	223	44
Particles >6µm	ASTM D7647	>640	<b>169</b>	54	18
Particles >14µm	ASTM D7647	>80	<b>20</b>	5	2
Particles >21µm	ASTM D7647	>20	<b>5</b>	1	0
Particles >38µm	ASTM D7647	>4	<b>1</b>	0	0
Particles >71µm	ASTM D7647	>3	<b>0</b>	0	0
Oil Cleanliness	ISO 4406 (c)	>18/16/13	<b>16/15/11</b>	15/13/10	13/11/9

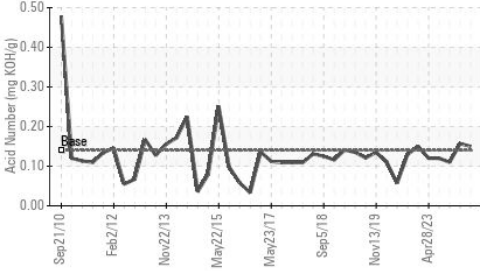
## FLUID DEGRADATION

	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	0.14	<b>0.15</b>	0.157

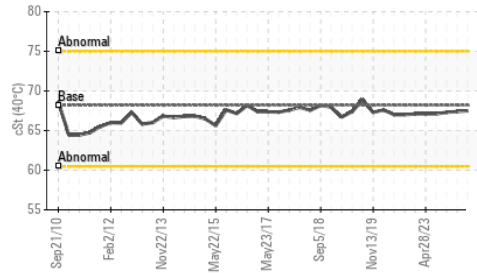
### Particle Trend



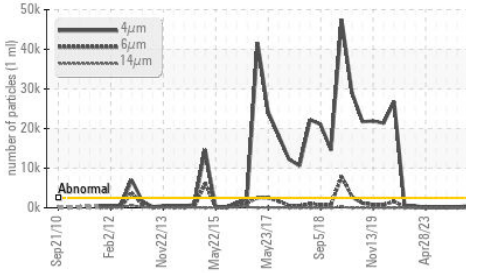
### Acid Number



### Viscosity @ 40°C



### Particle Trend

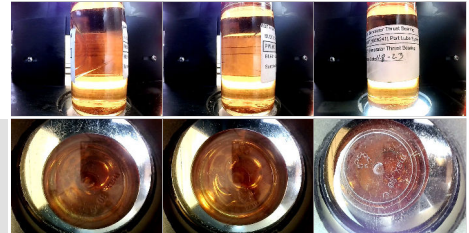


VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance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

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	68.2	67.5	67.4

SAMPLE IMAGES	method	limit/base	current	history1	history2
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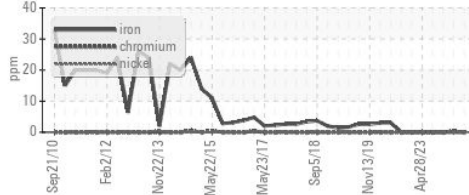
### Color



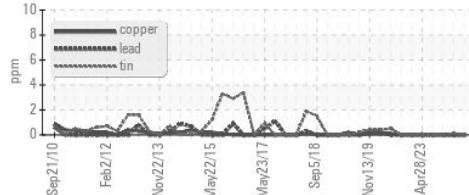
### Bottom

## GRAPHS

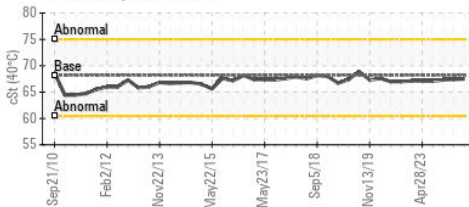
### Ferrous Alloys



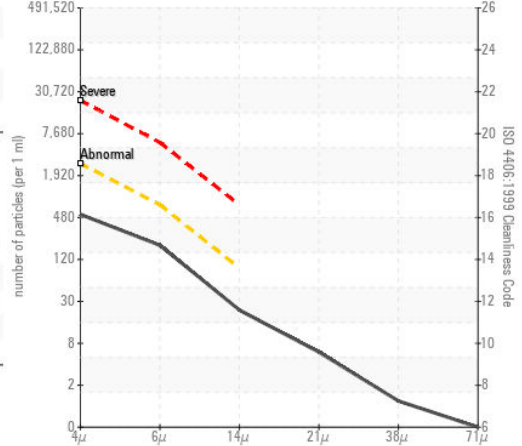
### Non-ferrous Metals



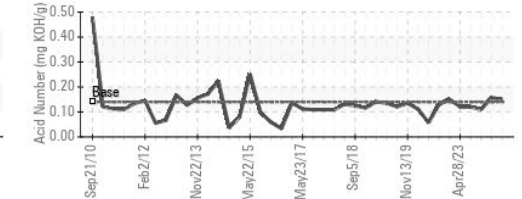
### Viscosity @ 40°C



### Particle Count



### Acid Number



Certificate L2367

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

Sample No. : WC06196622

Lab Number : 06196622

Unique Number : 11058745

Test Package : IND 2

Received : 31 May 2024

Tested : 03 Jun 2024

Diagnosed : 03 Jun 2024 - Don Baldrige

**NORTHWESTERN ENERGY**

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GREAT FALLS, MT

US 59404

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brian.ward@northwestern.com

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F: (406)533-3401

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)