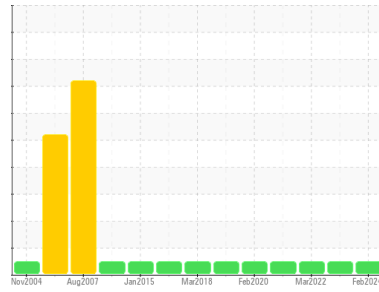




# OIL ANALYSIS REPORT

Sample Rating Trend



**NORMAL**



Area  
**Thompson Falls**  
 Machine Id  
**THF04 Governor**

Component  
**Hydraulic System**  
 Fluid  
**LUBRICATION ENG 6802 MULTEC IND OIL 46 (40 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 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>WC0757767</b>	WCI2326262	WCI2326105
Sample Date	Client Info		<b>14 Feb 2024</b>	04 Mar 2023	01 Mar 2022
Machine Age	yrs	Client Info	<b>22</b>	21	20
Oil Age	yrs	Client Info	<b>16</b>	15	14
Oil Changed	Client Info		<b>Not Chngd</b>	Not Chngd	Not Chngd
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	>30	<b>&lt;1</b>	0	<1
Chromium	ppm	ASTM D5185m	>2	<b>&lt;1</b>	0	0
Nickel	ppm	ASTM D5185m	>2	<b>0</b>	0	0
Titanium	ppm	ASTM D5185m		<b>&lt;1</b>	0	0
Silver	ppm	ASTM D5185m		<b>&lt;1</b>	0	0
Aluminum	ppm	ASTM D5185m	>2	<b>2</b>	<1	<1
Lead	ppm	ASTM D5185m	>10	<b>1</b>	1	<1
Copper	ppm	ASTM D5185m	>25	<b>1</b>	<1	<1
Tin	ppm	ASTM D5185m	>20	<b>&lt;1</b>	0	<1
Antimony	ppm	ASTM D5185m		<b>---</b>	---	---
Vanadium	ppm	ASTM D5185m		<b>&lt;1</b>	0	0
Cadmium	ppm	ASTM D5185m		<b>0</b>	0	0

## ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m		<b>0</b>	0	0
Barium	ppm	ASTM D5185m		<b>&lt;1</b>	2	0
Molybdenum	ppm	ASTM D5185m		<b>0</b>	0	0
Manganese	ppm	ASTM D5185m		<b>0</b>	0	0
Magnesium	ppm	ASTM D5185m		<b>1</b>	<1	0
Calcium	ppm	ASTM D5185m		<b>116</b>	115	119
Phosphorus	ppm	ASTM D5185m		<b>340</b>	316	360
Zinc	ppm	ASTM D5185m		<b>217</b>	218	204
Sulfur	ppm	ASTM D5185m		<b>1020</b>	941	855

## CONTAMINANTS

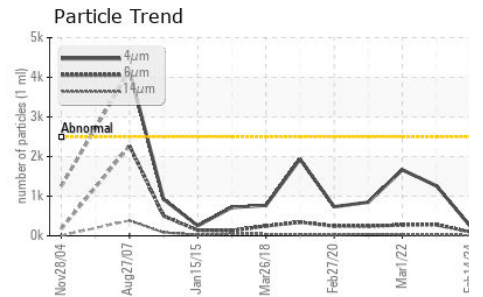
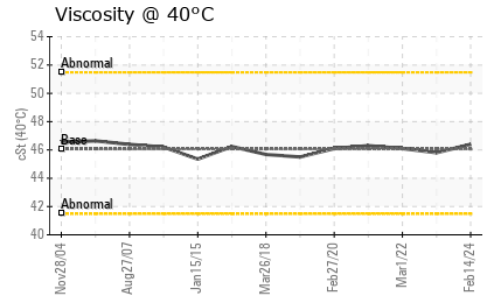
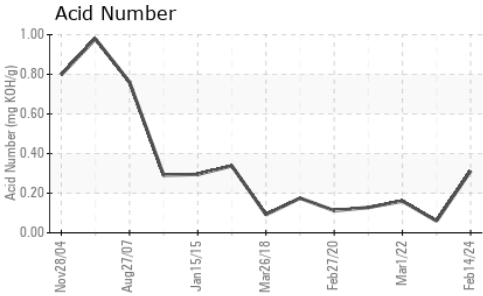
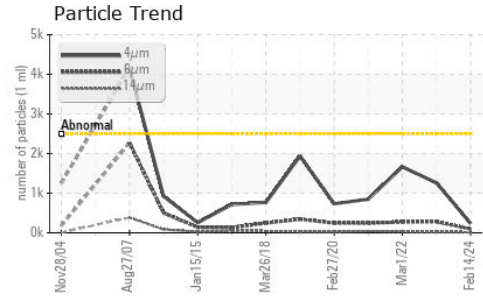
	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>25	<b>0</b>	0	0
Sodium	ppm	ASTM D5185m		<b>0</b>	0	0
Potassium	ppm	ASTM D5185m	>20	<b>2</b>	1	0

## FLUID CLEANLINESS

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>2500	<b>235</b>	1260	1665
Particles >6µm	ASTM D7647	>640	<b>93</b>	281	274
Particles >14µm	ASTM D7647	>80	<b>14</b>	17	31
Particles >21µm	ASTM D7647	>20	<b>3</b>	3	9
Particles >38µm	ASTM D7647	>4	<b>0</b>	0	1
Particles >71µm	ASTM D7647	>3	<b>0</b>	0	0
Oil Cleanliness	ISO 4406 (c)	>18/16/13	<b>15/14/11</b>	17/15/11	18/15/12



# OIL ANALYSIS REPORT

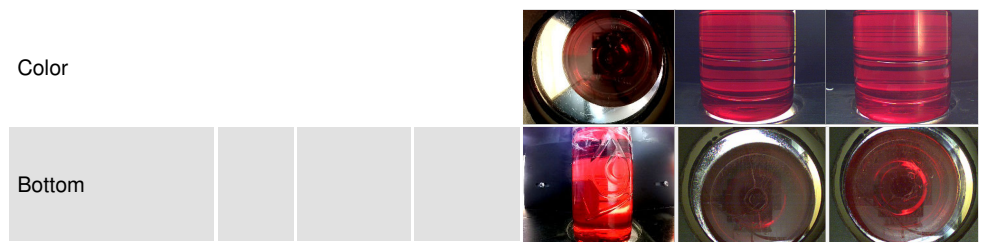


FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		<b>0.312</b>	0.06	0.16

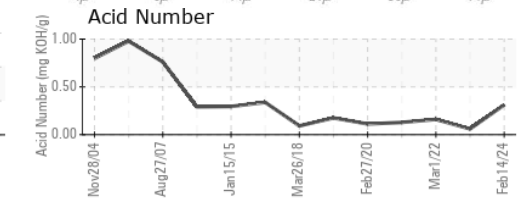
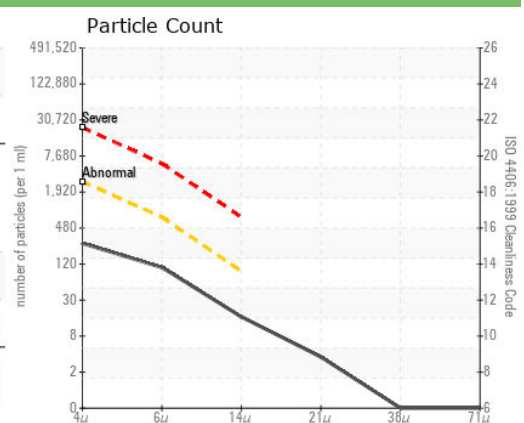
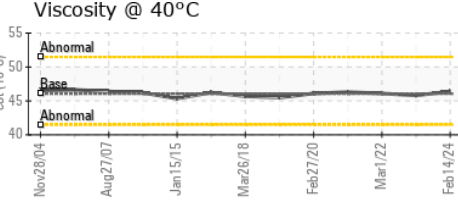
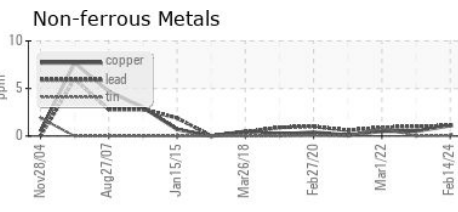
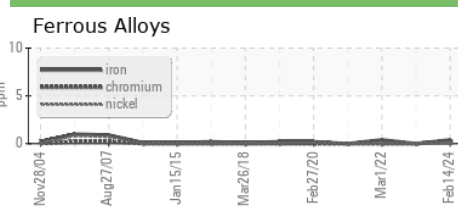
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Precipitate	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Silt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Debris	scalar	*Visual	NONE	<b>NONE</b>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

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	46.06	<b>46.4</b>	45.8	46.1

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



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : WC0757767  
**Lab Number** : **06142202**  
**Unique Number** : 10967010  
**Test Package** : IND 2  
**Received** : 08 Apr 2024  
**Tested** : 11 Apr 2024  
**Diagnosed** : 11 Apr 2024 - Don Baldrige

**NORTHWESTERN ENERGY**  
 6700 RAINBOW DAM RD  
 GREAT FALLS, MT  
 US 59404  
 Contact: BRIAN WARD  
 brian.ward@northwestern.com

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)