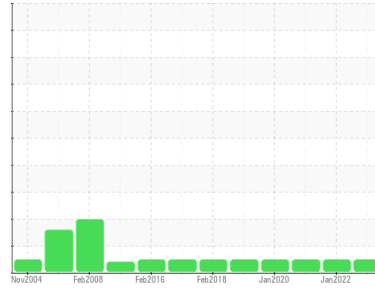




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area
Thompson Falls
 Machine Id
THF06 Governor

Component
Tank Governor 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

There is no indication of any contamination in the component. The amount and size of particulates present in the system is 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		WCI2326306	WCI2326875	WCI2326287
Sample Date	Client Info		07 Feb 2023	19 Jan 2022	01 Feb 2021
Machine Age	yrs	Client Info	19	18	17
Oil Age	yrs	Client Info	19	18	17
Oil Changed	Client Info		Not Changed	Not Changd	Not Changed
Sample Status			NORMAL	NORMAL	NORMAL

CONTAMINATION

	method	limit/base	current	history1	history2
Water	WC Method	>0.1	NEG	NEG	NEG

WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m >50	<1	<1	<1
Chromium	ppm	ASTM D5185m >10	0	0	0
Nickel	ppm	ASTM D5185m >10	0	<1	0
Titanium	ppm	ASTM D5185m	0	0	0
Silver	ppm	ASTM D5185m	0	0	<1
Aluminum	ppm	ASTM D5185m >3	0	0	0
Lead	ppm	ASTM D5185m >75	<1	<1	<1
Copper	ppm	ASTM D5185m >15	<1	<1	<1
Tin	ppm	ASTM D5185m >55	0	<1	<1
Antimony	ppm	ASTM D5185m >5	---	0	0
Vanadium	ppm	ASTM D5185m	0	0	0
Cadmium	ppm	ASTM D5185m	0	0	0

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	<1	<1
Barium	ppm	ASTM D5185m	0	0	0
Molybdenum	ppm	ASTM D5185m	<1	0	0
Manganese	ppm	ASTM D5185m	0	0	0
Magnesium	ppm	ASTM D5185m	<1	<1	0
Calcium	ppm	ASTM D5185m	112	122	117
Phosphorus	ppm	ASTM D5185m	283	319	306
Zinc	ppm	ASTM D5185m	126	134	116
Sulfur	ppm	ASTM D5185m	833	813	797

CONTAMINANTS

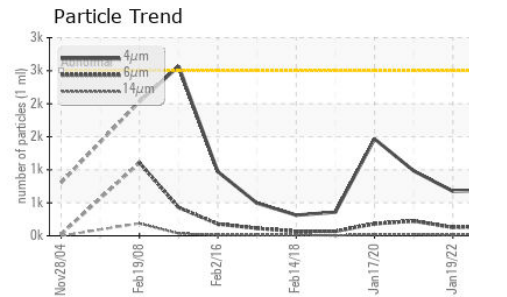
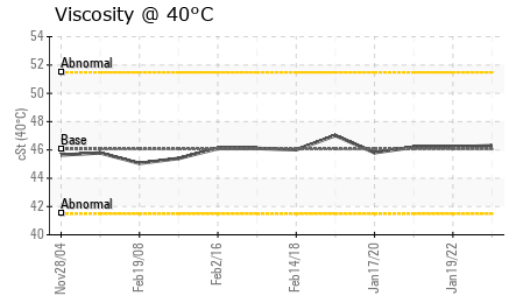
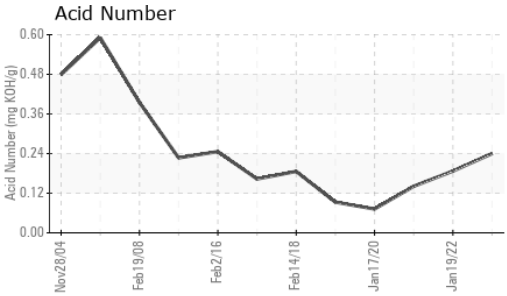
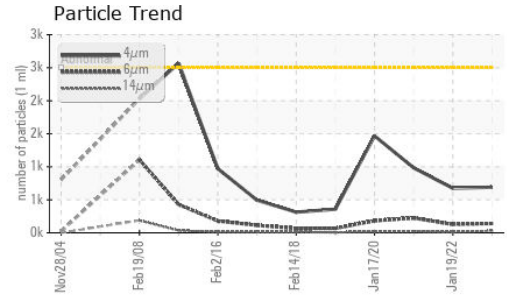
	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >8	0	<1	<1
Sodium	ppm	ASTM D5185m	2	3	3
Potassium	ppm	ASTM D5185m >20	<1	0	0

FLUID CLEANLINESS

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>2500	691	674	983
Particles >6µm	ASTM D7647	>640	141	127	225
Particles >14µm	ASTM D7647	>80	30	9	21
Particles >21µm	ASTM D7647	>20	6	2	6
Particles >38µm	ASTM D7647	>4	2	0	0
Particles >71µm	ASTM D7647	>3	0	0	0
Oil Cleanliness	ISO 4406 (c)	>18/16/13	17/14/12	17/14/10	17/15/12



OIL ANALYSIS REPORT

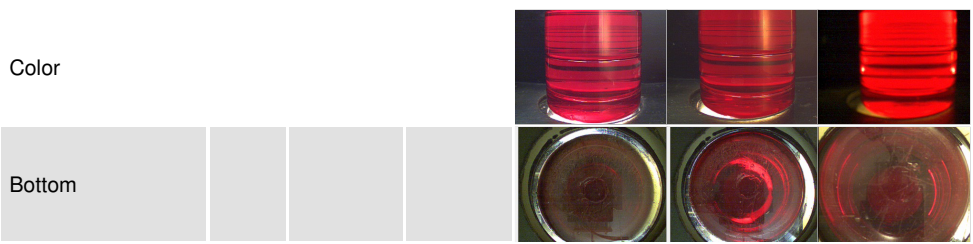


FLUID DEGRADATION	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	0.24	0.187	0.141

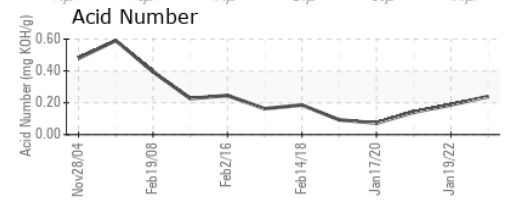
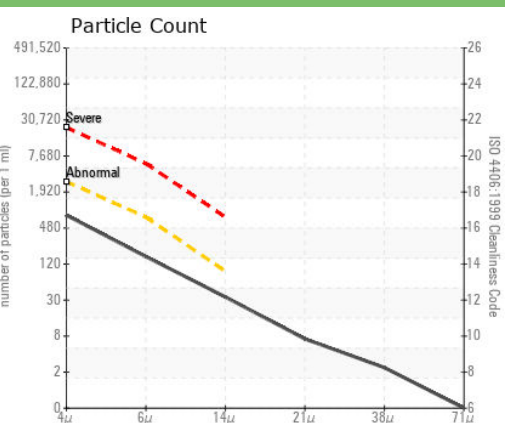
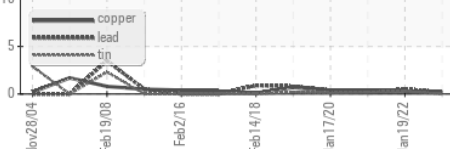
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	46.3	46.2	46.2

SAMPLE IMAGES	method	limit/base	current	history1	history2
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GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC12326306 **Received** : 10 Feb 2023
Lab Number : **05765067** **Diagnosed** : 13 Feb 2023
Unique Number : 10334675 **Diagnostician** : Doug Bogart
Test Package : IND 2 (Additional Tests: PrtCount)

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