



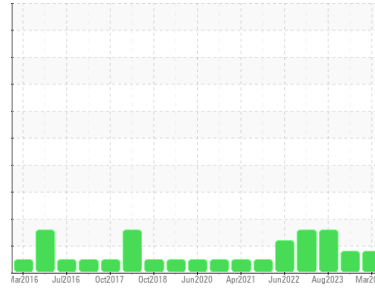
# OIL ANALYSIS REPORT

Sample Rating Trend

ISO



Area  
**THUNDER SPIRIT [200005313]**  
 Machine Id  
**20WEA84013 (S/N 72802187631)**  
 Component  
**Wind Turbine Gearbox**  
 Fluid  
**FUCHS RENOLIN UNISYN CLP 320 (--- QTS)**



## DIAGNOSIS

### Recommendation

We recommend you service the filters on this component if applicable. Resample at the next service interval to monitor.

### Wear

All component wear rates are normal.

### Contamination

There is a high 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	history1	history2
Sample Number	Client Info		<b>NX014750</b>	NX014807	NX013563
Sample Date	Client Info		<b>07 Mar 2024</b>	04 Oct 2023	01 Aug 2023
Machine Age	hrs	Client Info	<b>4950</b>	55534	54391
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>ABNORMAL</b>	ATTENTION	ATTENTION

## WEAR METALS

	method	limit/base	current	history1	history2	
PQ	ASTM D8184	>50	<b>15</b>	14	18	
Iron	ppm	ASTM D5185m	>30	<b>23</b>	13	10
Chromium	ppm	ASTM D5185m	>3	<b>0</b>	<1	0
Nickel	ppm	ASTM D5185m	>3	<b>0</b>	<1	0
Titanium	ppm	ASTM D5185m	>10	<b>0</b>	<1	0
Silver	ppm	ASTM D5185m		<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m	>30	<b>&lt;1</b>	1	0
Lead	ppm	ASTM D5185m	>15	<b>0</b>	0	0
Copper	ppm	ASTM D5185m	>10	<b>0</b>	<1	<1
Tin	ppm	ASTM D5185m	>10	<b>&lt;1</b>	<1	0
Vanadium	ppm	ASTM D5185m		<b>0</b>	0	0
Cadmium	ppm	ASTM D5185m		<b>0</b>	<1	0

## ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m		<b>10</b>	9	6
Barium	ppm	ASTM D5185m		<b>0</b>	<1	3
Molybdenum	ppm	ASTM D5185m		<b>58</b>	61	55
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	0	0
Magnesium	ppm	ASTM D5185m		<b>0</b>	0	<1
Calcium	ppm	ASTM D5185m		<b>109</b>	107	97
Phosphorus	ppm	ASTM D5185m		<b>198</b>	208	195
Zinc	ppm	ASTM D5185m		<b>0</b>	0	0
Sulfur	ppm	ASTM D5185m		<b>5379</b>	5199	5163

## CONTAMINANTS

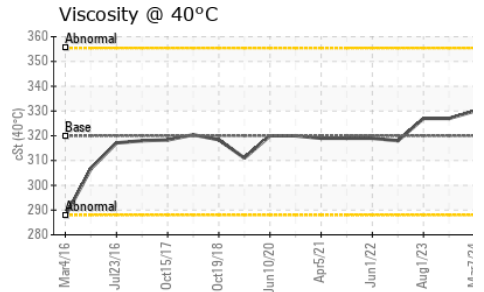
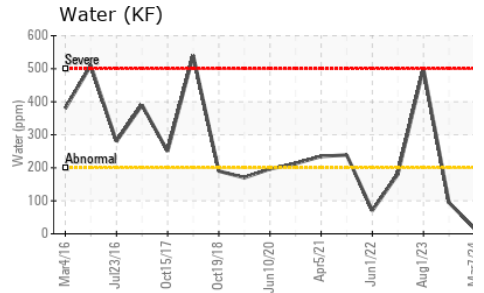
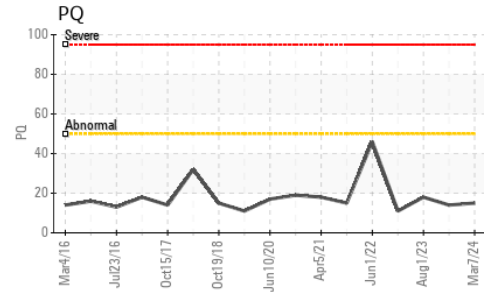
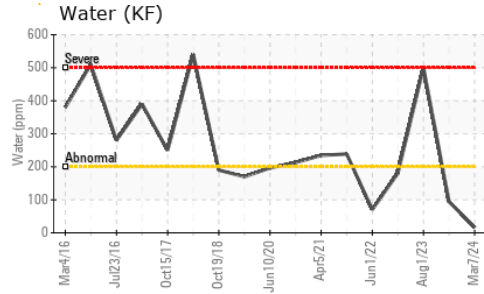
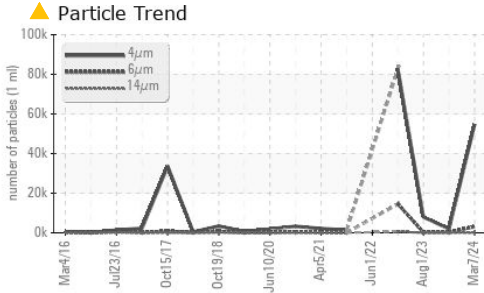
	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>+15	<b>1</b>	1	<1
Sodium	ppm	ASTM D5185m		<b>0</b>	0	0
Potassium	ppm	ASTM D5185m	>20	<b>0</b>	3	2
Water	%	ASTM D6304	>0.02	<b>0.002</b>	0.009	0.050
ppm Water	ppm	ASTM D6304	>200	<b>16</b>	94.3	500

## FLUID CLEANLINESS

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		<b>54724</b>	1974	7960
Particles >6µm	ASTM D7647	>320	<b>3136</b>	298	274
Particles >14µm	ASTM D7647	>40	<b>23</b>	29	18
Particles >21µm	ASTM D7647	>10	<b>5</b>	8	6
Particles >38µm	ASTM D7647	>3	<b>0</b>	2	2
Particles >71µm	ASTM D7647	>3	<b>0</b>	1	0
Oil Cleanliness	ISO 4406 (c)	>--/15/12	<b>23/19/12</b>	18/15/12	20/15/11

## FLUID DEGRADATION

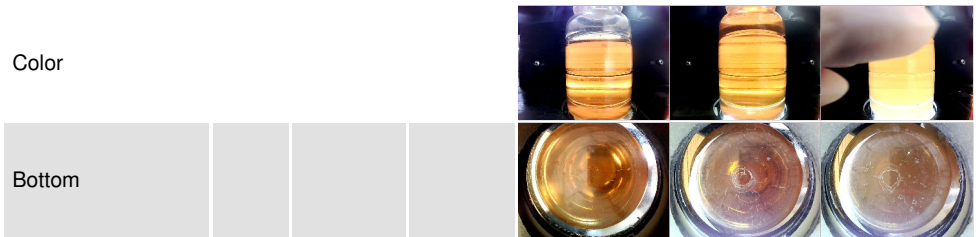
	method	limit/base	current	history1	history2	
Acid Number (AN)	mg KOH/g	ASTM D8045	0.6	<b>0.37</b>	0.34	0.38



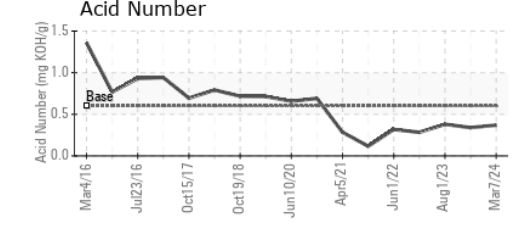
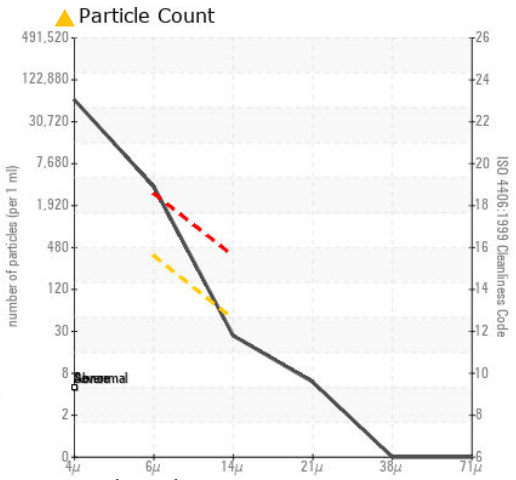
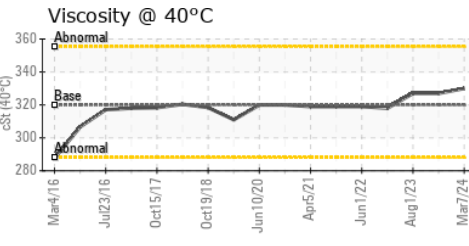
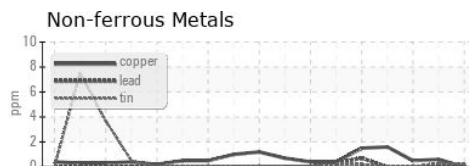
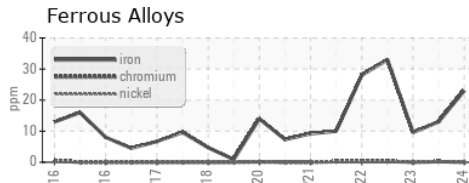
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	MODER
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.02	NEG	0.2%
Free Water	scalar	*Visual		NEG	NEG

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	320	330	327

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



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : NX014750  
**Lab Number** : 06123097  
**Unique Number** : 10937248  
**Test Package** : IND 2 ( Additional Tests: KF, PQ, PrtCount )

**NORDEX USA - Chicago**  
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 T: (312)386-4124  
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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)