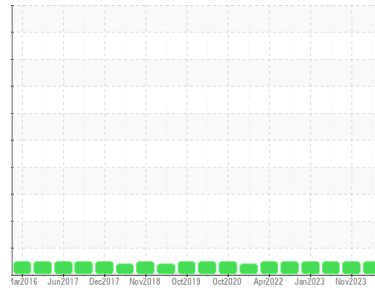




# OIL ANALYSIS REPORT

## Sample Rating Trend



**NORMAL**



Area  
**THUNDER SPIRIT [200009532]**  
 Machine Id  
**08WEA84025 (S/N 72802187368)**  
 Component  
**Wind Turbine Gearbox**  
 Fluid  
**CASTROL OPTIGEAR SYNTHETIC X 320 (--- LTR)**

### 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		<b>NX014826</b>	NX013639	NX011660
Sample Date	Client Info		<b>11 Mar 2024</b>	07 Nov 2023	27 Jul 2023
Machine Age	hrs	Client Info	<b>20945</b>	57946	62736
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

### WEAR METALS

	method	limit/base	current	history1	history2	
PQ	ASTM D8184	>80	<b>15</b>	10	15	
Iron	ppm	ASTM D5185m	>150	<b>6</b>	4	7
Chromium	ppm	ASTM D5185m	>5	<b>&lt;1</b>	0	0
Nickel	ppm	ASTM D5185m	>10	<b>&lt;1</b>	<1	0
Titanium	ppm	ASTM D5185m	>10	<b>&lt;1</b>	0	0
Silver	ppm	ASTM D5185m		<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m	>10	<b>7</b>	7	0
Lead	ppm	ASTM D5185m	>20	<b>&lt;1</b>	<1	0
Copper	ppm	ASTM D5185m	>50	<b>6</b>	4	7
Tin	ppm	ASTM D5185m	>10	<b>&lt;1</b>	<1	0
Vanadium	ppm	ASTM D5185m		<b>&lt;1</b>	<1	0
Cadmium	ppm	ASTM D5185m		<b>&lt;1</b>	0	0

### ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m		<b>0</b>	27	0
Barium	ppm	ASTM D5185m		<b>&lt;1</b>	<1	7
Molybdenum	ppm	ASTM D5185m	1150	<b>838</b>	838	984
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	<1	0
Magnesium	ppm	ASTM D5185m		<b>6</b>	8	6
Calcium	ppm	ASTM D5185m	2000	<b>1621</b>	1553	1750
Phosphorus	ppm	ASTM D5185m	400	<b>390</b>	370	380
Zinc	ppm	ASTM D5185m	0	<b>0</b>	0	1
Sulfur	ppm	ASTM D5185m	1850	<b>2232</b>	1972	2421

### CONTAMINANTS

	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>50	<b>13</b>	9	10
Sodium	ppm	ASTM D5185m	>20	<b>3</b>	2	0
Potassium	ppm	ASTM D5185m	>20	<b>2</b>	2	1
Water	%	ASTM D6304	>0.05	<b>0.013</b>	0.013	0.032
ppm Water	ppm	ASTM D6304	>500	<b>138</b>	138	326.7

### FLUID CLEANLINESS

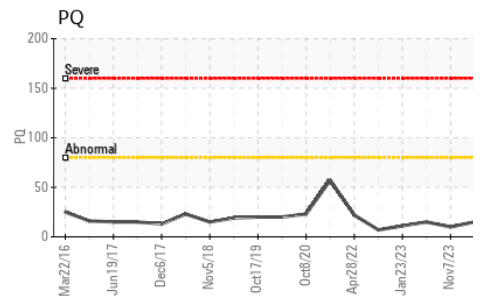
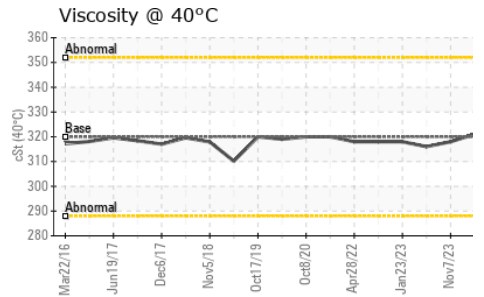
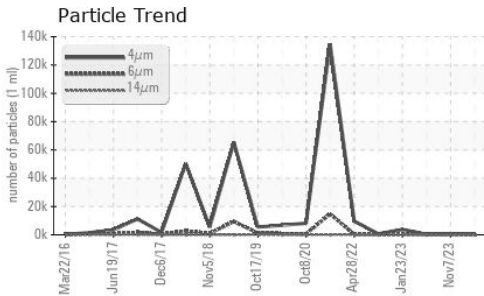
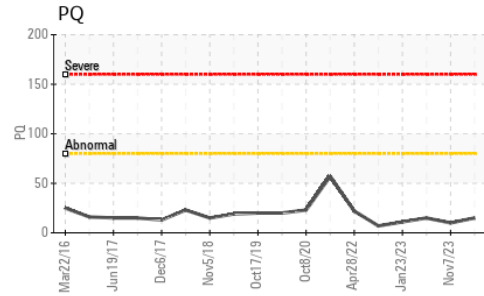
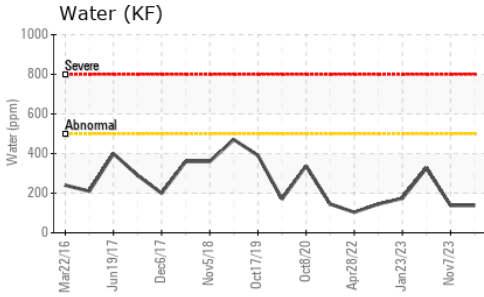
	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		<b>473</b>	550	367
Particles >6µm	ASTM D7647	>2500	<b>89</b>	115	98
Particles >14µm	ASTM D7647	>320	<b>8</b>	9	16
Particles >21µm	ASTM D7647	>80	<b>1</b>	2	5
Particles >38µm	ASTM D7647	>20	<b>0</b>	1	1
Particles >71µm	ASTM D7647	>4	<b>0</b>	1	0
Oil Cleanliness	ISO 4406 (c)	>--/18/15	<b>16/14/10</b>	16/14/10	16/14/11

### FLUID DEGRADATION

	method	limit/base	current	history1	history2	
Acid Number (AN)	mg KOH/g	ASTM D8045	1.6	<b>1.51</b>	0.77	1.15



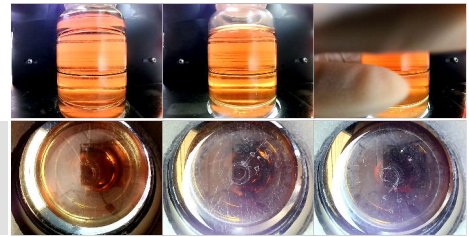
# OIL ANALYSIS REPORT



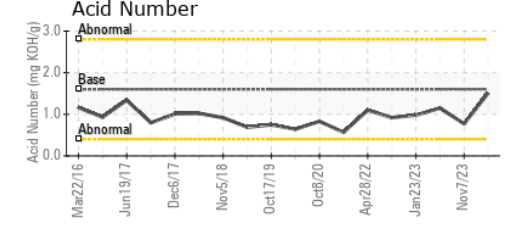
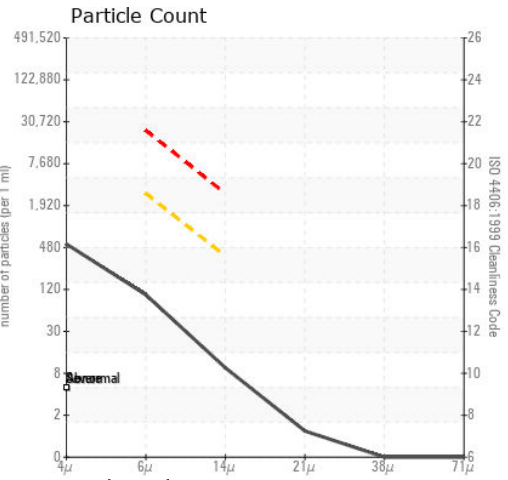
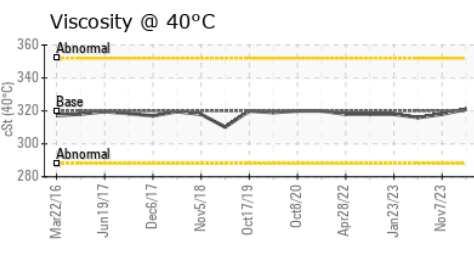
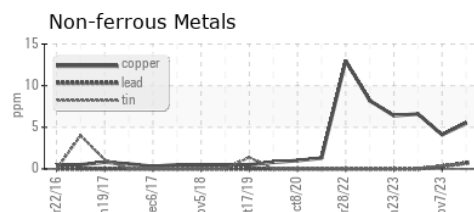
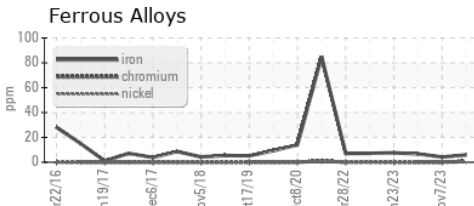
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	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 320	321	318	316

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					



## GRAPHS



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : NX014826 **Received** : 01 Apr 2024  
**Lab Number** : 06135614 **Tested** : 03 Apr 2024  
**Unique Number** : 10955079 **Diagnosed** : 04 Apr 2024 - Don Baldrige  
**Test Package** : IND 2 ( Additional Tests: KF, PQ, PrtCount )

**NORDEX USA - Chicago**  
 300 SOUTH WACKER DRIVE, SUITE 1500  
 CHICAGO, IL 60606  
 Contact: DEVIN LINEHAN  
 DLinehan@nordex-online.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)