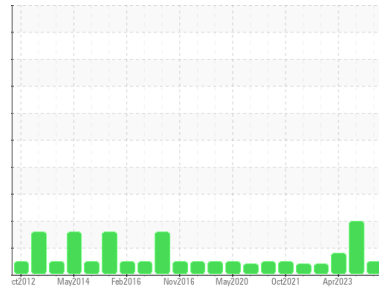




# OIL ANALYSIS REPORT

Sample Rating Trend



**NORMAL**



Area  
**ROTH ROCK [200005321]**

Machine Id  
**13WEA81557**

Component  
**Wind Turbine Gearbox**

Fluid  
**CASTROL OPTIGEAR SYNTHETIC A ISO 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>NX016954</b>	NX013888	NX012923
Sample Date	Client Info		<b>06 May 2024</b>	19 Oct 2023	25 Apr 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>	ATTENTION	ABNORMAL

## WEAR METALS

	method	limit/base	current	history1	history2	
PQ	ASTM D8184	>80	<b>15</b>	16	16	
Iron	ppm	ASTM D5185m	>150	<b>33</b>	50	61
Chromium	ppm	ASTM D5185m	>5	<b>&lt;1</b>	<1	1
Nickel	ppm	ASTM D5185m	>10	<b>0</b>	0	<1
Titanium	ppm	ASTM D5185m	>10	<b>&lt;1</b>	0	<1
Silver	ppm	ASTM D5185m		<b>&lt;1</b>	0	0
Aluminum	ppm	ASTM D5185m	>10	<b>4</b>	7	<1
Lead	ppm	ASTM D5185m	>20	<b>&lt;1</b>	0	<1
Copper	ppm	ASTM D5185m	>50	<b>&lt;1</b>	2	<1
Tin	ppm	ASTM D5185m	>10	<b>0</b>	0	<1
Vanadium	ppm	ASTM D5185m		<b>&lt;1</b>	<1	0
Cadmium	ppm	ASTM D5185m		<b>0</b>	0	0

## ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m	0	<b>0</b>	10	0
Barium	ppm	ASTM D5185m	0	<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185m	1150	<b>986</b>	535	590
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	2	2
Magnesium	ppm	ASTM D5185m	1800	<b>1859</b>	1592	1623
Calcium	ppm	ASTM D5185m	20	<b>10</b>	16	16
Phosphorus	ppm	ASTM D5185m	1450	<b>1407</b>	1142	1183
Zinc	ppm	ASTM D5185m	1650	<b>1630</b>	1288	1336
Sulfur	ppm	ASTM D5185m	4900	<b>6769</b>	4806	5626

## CONTAMINANTS

	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>50	<b>14</b>	9	10
Sodium	ppm	ASTM D5185m	>20	<b>8</b>	23	23
Potassium	ppm	ASTM D5185m	>20	<b>0</b>	0	2
Water	%	ASTM D6304	>0.1	<b>0.012</b>	0.139	0.04
ppm Water	ppm	ASTM D6304	>1000	<b>128</b>	1400	400.0

## FLUID CLEANLINESS

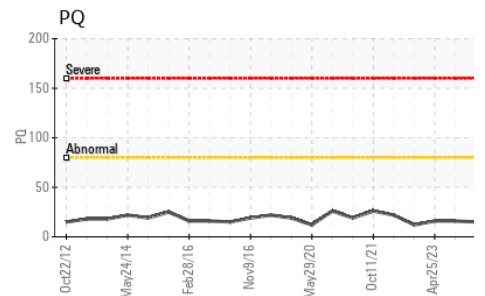
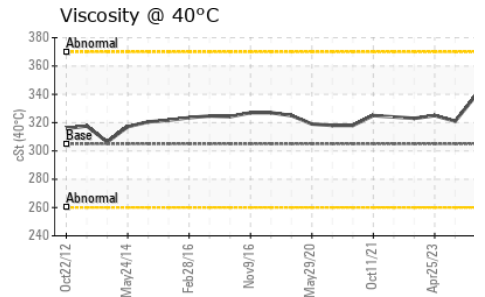
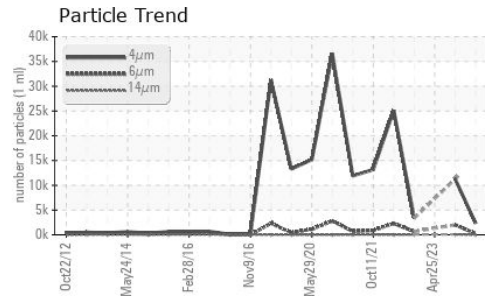
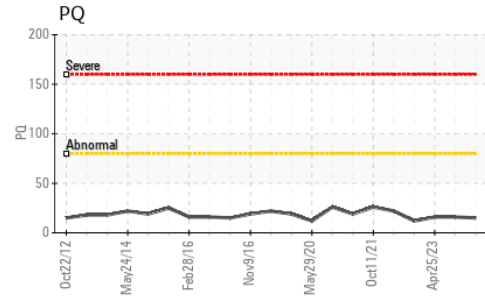
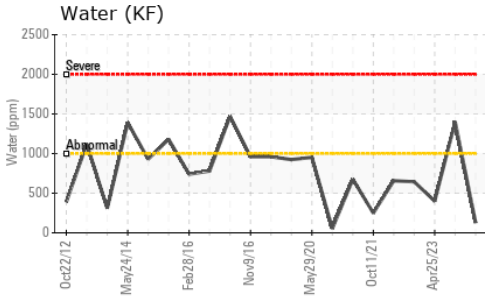
	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		<b>2319</b>	11275	---
Particles >6µm	ASTM D7647	>2500	<b>257</b>	2007	---
Particles >14µm	ASTM D7647	>320	<b>11</b>	76	---
Particles >21µm	ASTM D7647	>80	<b>4</b>	12	---
Particles >38µm	ASTM D7647	>20	<b>1</b>	1	---
Particles >71µm	ASTM D7647	>4	<b>1</b>	0	---
Oil Cleanliness	ISO 4406 (c)	>--/18/15	<b>18/15/11</b>	21/18/13	---

## FLUID DEGRADATION

	method	limit/base	current	history1	history2	
Acid Number (AN)	mg KOH/g	ASTM D8045	3.3	<b>2.57</b>	2.83	1.60



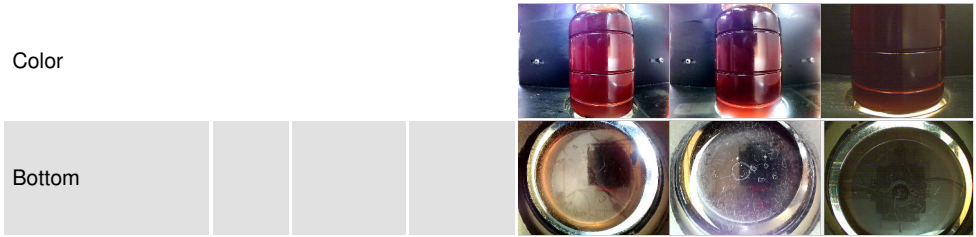
# OIL ANALYSIS REPORT



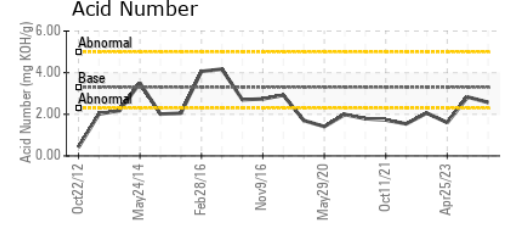
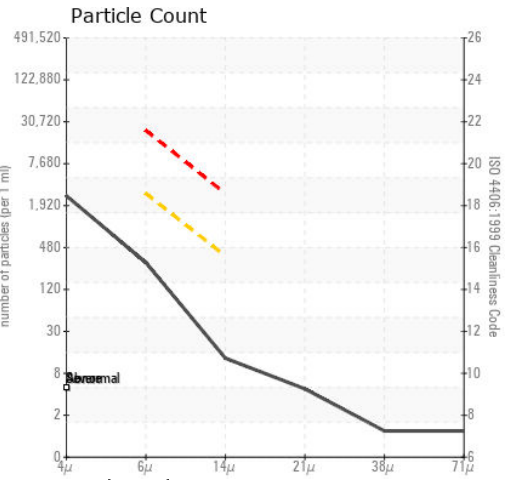
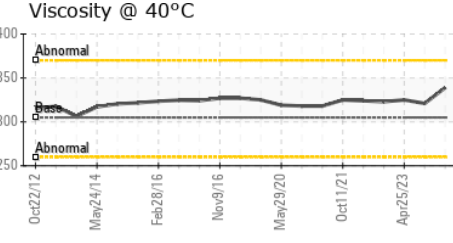
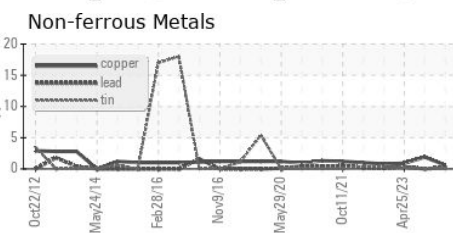
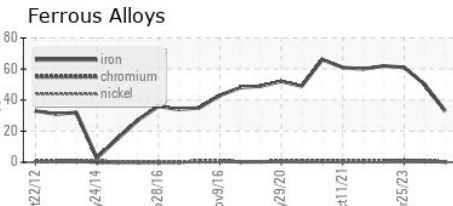
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	MODER
Debris	scalar	*Visual	NONE	NONE	▲ MODER
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	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 305	339	321	325

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



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : NX016954 **Received** : 17 May 2024  
**Lab Number** : 06182846 **Tested** : 20 May 2024  
**Unique Number** : 11034172 **Diagnosed** : 21 May 2024 - Angela Borella  
**Test Package** : IND 2 ( Additional Tests: KF, PQ, PrtCount )

**NORDEX USA - ROTH ROCK**  
 300 SOUTH WACKER DRIVE, SUITE 1500  
 CHICAGO, IL  
 US 60606  
 Contact: ADAY MAGEC  
 aday.magec@gestampren.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)