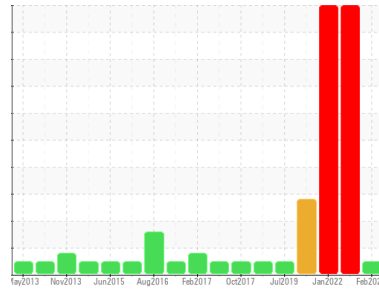




# OIL ANALYSIS REPORT

Sample Rating Trend



**NORMAL**



Area  
**BEEBE [2000060080]**  
 Machine Id  
**02WEA82344**  
 Component  
**Wind Turbine Gearbox**  
 Fluid  
**CASTROL OPTIGEAR SYNTHETIC X 320 (4 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 oil. The amount and size of particulates present in the system are 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>NX06146576</b>	NX05798669	NX05473534
Sample Date	Client Info		<b>06 Feb 2024</b>	23 Jan 2023	04 Jan 2022
Machine Age	hrs	Client Info	<b>96257</b>	26476	65800
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>	SEVERE	SEVERE

## WEAR METALS

	method	limit/base	current	history1	history2	
PQ	ASTM D8184	>80	<b>29</b>	▲ 128	▲ 99	
Iron	ppm	ASTM D5185m	>150	<b>54</b>	▲ 467	▲ 398
Chromium	ppm	ASTM D5185m	>5	<b>1</b>	4	4
Nickel	ppm	ASTM D5185m	>10	<b>1</b>	3	3
Titanium	ppm	ASTM D5185m	>10	<b>&lt;1</b>	0	0
Silver	ppm	ASTM D5185m		<b>&lt;1</b>	0	<1
Aluminum	ppm	ASTM D5185m	>10	<b>7</b>	1	<1
Lead	ppm	ASTM D5185m	>20	<b>&lt;1</b>	0	<1
Copper	ppm	ASTM D5185m	>50	<b>1</b>	2	2
Tin	ppm	ASTM D5185m	>10	<b>&lt;1</b>	0	<1
Antimony	ppm	ASTM D5185m	>5	<b>---</b>	---	<1
Vanadium	ppm	ASTM D5185m		<b>&lt;1</b>	0	<1
Cadmium	ppm	ASTM D5185m		<b>1</b>	0	0

## ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m		<b>0</b>	0	16
Barium	ppm	ASTM D5185m		<b>4</b>	1	0
Molybdenum	ppm	ASTM D5185m	1150	<b>952</b>	680	707
Manganese	ppm	ASTM D5185m		<b>1</b>	4	3
Magnesium	ppm	ASTM D5185m		<b>8</b>	15	21
Calcium	ppm	ASTM D5185m	2000	<b>1797</b>	1416	1626
Phosphorus	ppm	ASTM D5185m	400	<b>359</b>	289	363
Zinc	ppm	ASTM D5185m	0	<b>&lt;1</b>	10	5
Sulfur	ppm	ASTM D5185m	1850	<b>2046</b>	1587	1650

## CONTAMINANTS

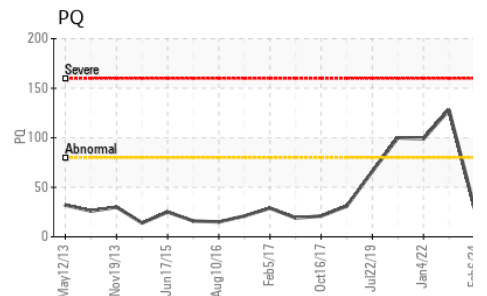
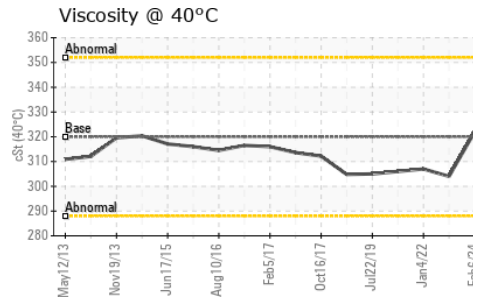
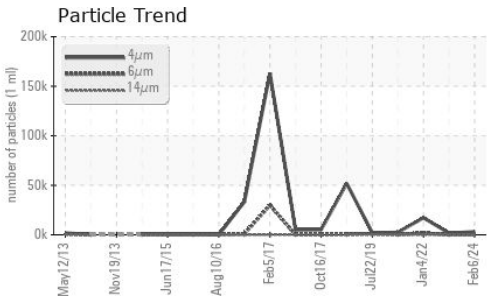
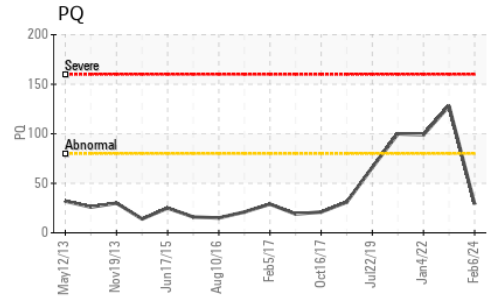
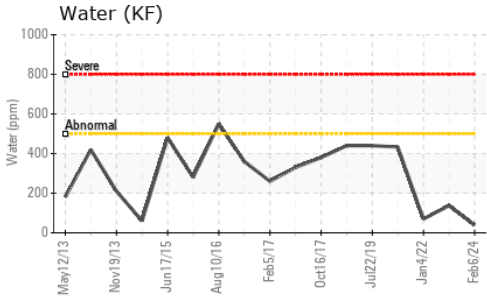
	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>50	<b>20</b>	11	12
Sodium	ppm	ASTM D5185m	>20	<b>0</b>	0	5
Potassium	ppm	ASTM D5185m	>20	<b>1</b>	<1	<1
Water	%	ASTM D6304	>0.05	<b>0.003</b>	0.013	0.006
ppm Water	ppm	ASTM D6304	>500	<b>39</b>	136.9	69.9

## FLUID CLEANLINESS

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		<b>3161</b>	1631	17265
Particles >6µm	ASTM D7647	>2500	<b>73</b>	190	1717
Particles >14µm	ASTM D7647	>320	<b>6</b>	8	44
Particles >21µm	ASTM D7647	>80	<b>3</b>	2	7
Particles >38µm	ASTM D7647	>20	<b>0</b>	0	0
Particles >71µm	ASTM D7647	>4	<b>0</b>	0	0
Oil Cleanliness	ISO 4406 (c)	>--/18/15	<b>19/13/10</b>	18/15/10	21/18/13



# OIL ANALYSIS REPORT

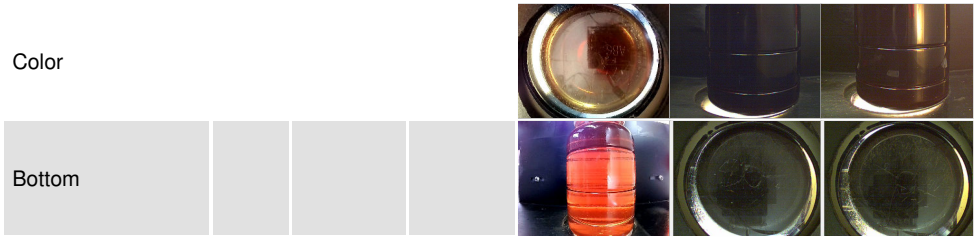


FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	1.6	<b>1.08</b>	0.262	0.332

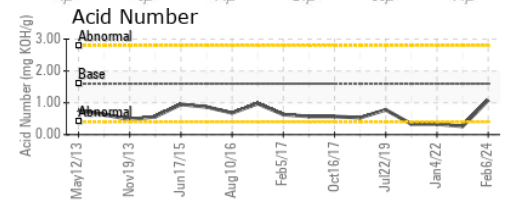
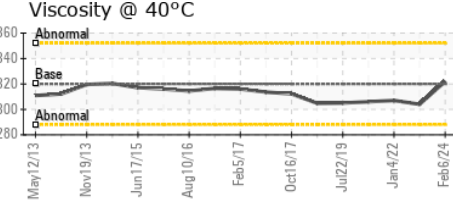
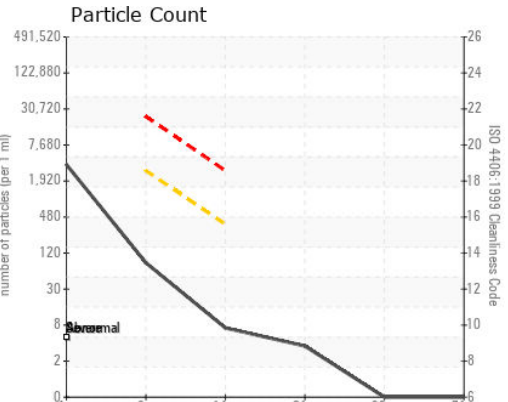
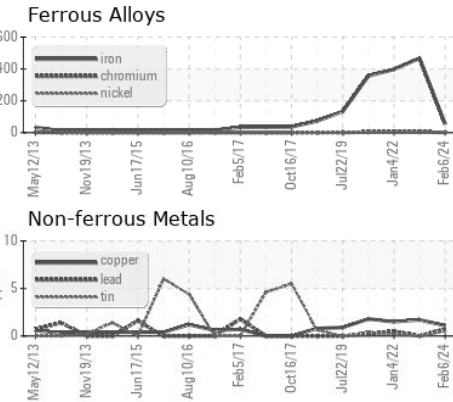
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	LIGHT
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Precipitate	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Silt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Debris	scalar	*Visual	NONE	<b>NONE</b>	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	320	<b>322</b>	304	307

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



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : NX06146576  
**Lab Number** : 06146576  
**Unique Number** : 10976654  
**Test Package** : IND 2 ( Additional Tests: KF, PQ, PrtCount )

**NORDEX USA - BEEBE**  
 1200 S COUNTY FARM RD  
 ITHACA, MI  
 US 48847  
 Contact: TUCKER WITT  
 tucker.witt@constellation.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)