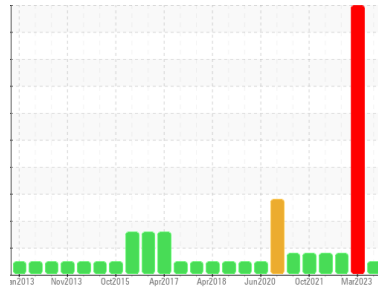




# OIL ANALYSIS REPORT

Sample Rating Trend



**NORMAL**



Area  
**BEEBE [2000060080]**

Machine Id  
**08WEA82312**

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>NX06146577</b>	NX05798672	NX05621778
Sample Date	Client Info		<b>26 Mar 2024</b>	21 Mar 2023	18 Aug 2022
Machine Age	hrs	Client Info	<b>97122</b>	70913	67406
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	ABNORMAL

## WEAR METALS

	method	limit/base	current	history1	history2	
PQ	ASTM D8184	>80	<b>25</b>	▲ 99	61	
Iron	ppm	ASTM D5185m	>150	<b>47</b>	▲ 375	▲ 320
Chromium	ppm	ASTM D5185m	>5	<b>&lt;1</b>	4	3
Nickel	ppm	ASTM D5185m	>10	<b>1</b>	2	3
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>	1	1
Lead	ppm	ASTM D5185m	>20	<b>&lt;1</b>	0	0
Copper	ppm	ASTM D5185m	>50	<b>1</b>	2	2
Tin	ppm	ASTM D5185m	>10	<b>&lt;1</b>	0	0
Antimony	ppm	ASTM D5185m	>5	<b>---</b>	---	---
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	0
Barium	ppm	ASTM D5185m		<b>4</b>	2	0
Molybdenum	ppm	ASTM D5185m	1150	<b>924</b>	754	802
Manganese	ppm	ASTM D5185m		<b>1</b>	4	3
Magnesium	ppm	ASTM D5185m		<b>9</b>	31	30
Calcium	ppm	ASTM D5185m	2000	<b>1756</b>	1535	1570
Phosphorus	ppm	ASTM D5185m	400	<b>353</b>	321	345
Zinc	ppm	ASTM D5185m	0	<b>2</b>	17	17
Sulfur	ppm	ASTM D5185m	1850	<b>1995</b>	1718	1992

## CONTAMINANTS

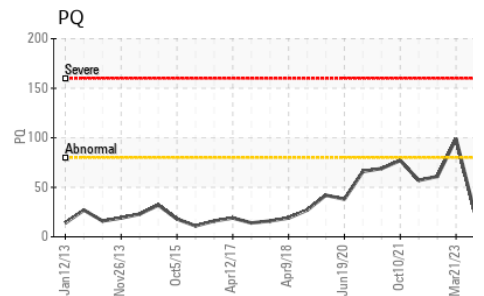
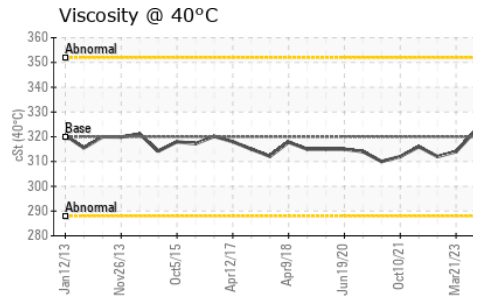
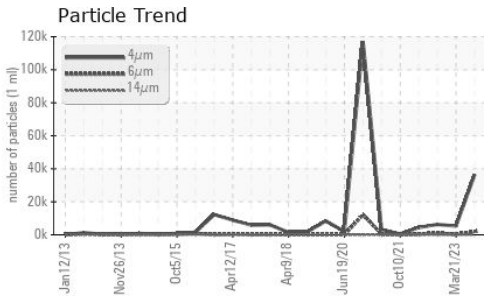
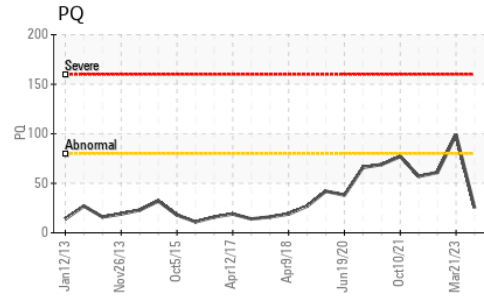
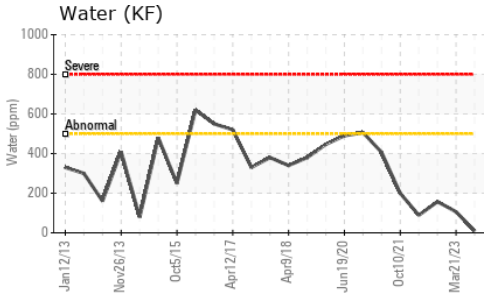
	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>50	<b>14</b>	10	8
Sodium	ppm	ASTM D5185m	>20	<b>0</b>	0	6
Potassium	ppm	ASTM D5185m	>20	<b>1</b>	<1	1
Water	%	ASTM D6304	>0.05	<b>0.001</b>	0.010	0.015
ppm Water	ppm	ASTM D6304	>500	<b>9</b>	106.4	157.1

## FLUID CLEANLINESS

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		<b>36390</b>	5290	6292
Particles >6µm	ASTM D7647	>2500	<b>1976</b>	346	1005
Particles >14µm	ASTM D7647	>320	<b>27</b>	6	48
Particles >21µm	ASTM D7647	>80	<b>6</b>	2	8
Particles >38µm	ASTM D7647	>20	<b>0</b>	1	0
Particles >71µm	ASTM D7647	>4	<b>0</b>	0	0
Oil Cleanliness	ISO 4406 (c)	>--/18/15	<b>22/18/12</b>	20/16/10	20/17/13



# OIL ANALYSIS REPORT



## FLUID DEGRADATION

method	limit/base	current	history1	history2
Acid Number (AN) mg KOH/g	ASTM D8045 1.6	<b>1.00</b>	0.195	0.307

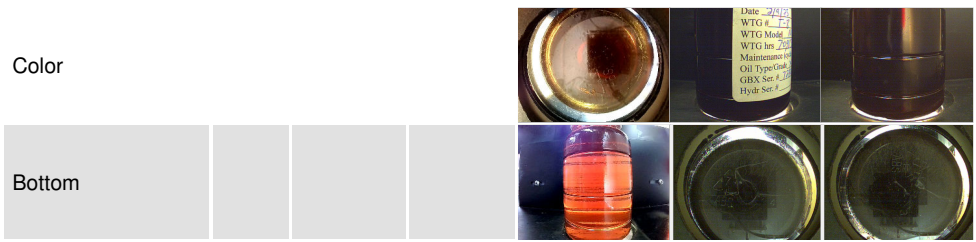
## VISUAL

method	limit/base	current	history1	history2
White Metal	scalar *Visual	NONE	NONE	VLITE
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	NEG

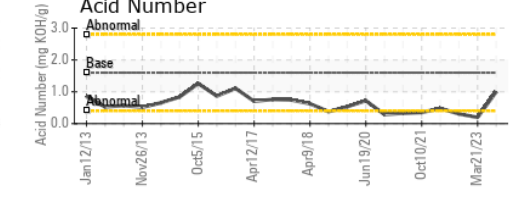
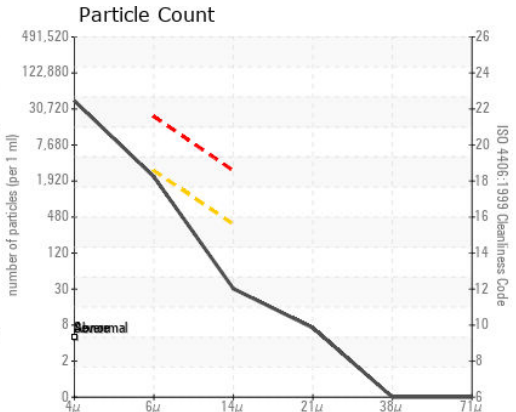
## FLUID PROPERTIES

method	limit/base	current	history1	history2
Visc @ 40°C	cSt ASTM D445 320	<b>322</b>	314	312

## SAMPLE IMAGES



## GRAPHS



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : NX06146577  
**Lab Number** : 06146577  
**Unique Number** : 10976655  
**Test Package** : IND 2 ( Additional Tests: KF, PQ, PrtCount )  
**Received** : 11 Apr 2024  
**Tested** : 12 Apr 2024  
**Diagnosed** : 15 Apr 2024 - Angela Borella

**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)