



# OIL ANALYSIS REPORT

WEAR	<b>NORMAL</b>
CONTAMINATION	<b>NORMAL</b>
FLUID CONDITION	<b>NORMAL</b>

Area  
**FOUR MILE RIDGE [200005315]**

Machine Id  
**83306 SITE 7**

Component  
**Wind Turbine Gearbox**

Fluid  
**CASTROL OPTIGEAR SYNTHETIC X 320 (--- LTR)**

## RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>NX012337</b>	NX012350	NX010438
Sample Date		Client Info		<b>15 Nov 2023</b>	08 Mar 2023	04 Nov 2022
Machine Age	hrs	Client Info		<b>71330</b>	65116	62508
Oil Age	hrs	Client Info		<b>71330</b>	65116	62508
Filter Age	hrs	Client Info		<b>0</b>	0	0
Oil Changed		Client Info		<b>Not Changed</b>	Not Changed	Not Changed
Filter Changed		Client Info		<b>Changed</b>	Changed	Changed
Sample Status				<b>NORMAL</b>	NORMAL	NORMAL

## WEAR

All component wear rates are normal.

PQ		ASTM D8184	>80	<b>12</b>	6	3
Iron	ppm	ASTM D5185m	>150	<b>2</b>	2	3
Chromium	ppm	ASTM D5185m	>5	<b>0</b>	0	<1
Nickel	ppm	ASTM D5185m	>10	<b>&lt;1</b>	0	0
Titanium	ppm	ASTM D5185m	>10	<b>0</b>	0	0
Silver	ppm	ASTM D5185m		<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m	>10	<b>4</b>	<1	0
Lead	ppm	ASTM D5185m	>20	<b>0</b>	0	<1
Copper	ppm	ASTM D5185m	>50	<b>1</b>	<1	<1
Tin	ppm	ASTM D5185m	>10	<b>&lt;1</b>	0	<1
Vanadium	ppm	ASTM D5185m		<b>0</b>	0	0
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE

## CONTAMINATION

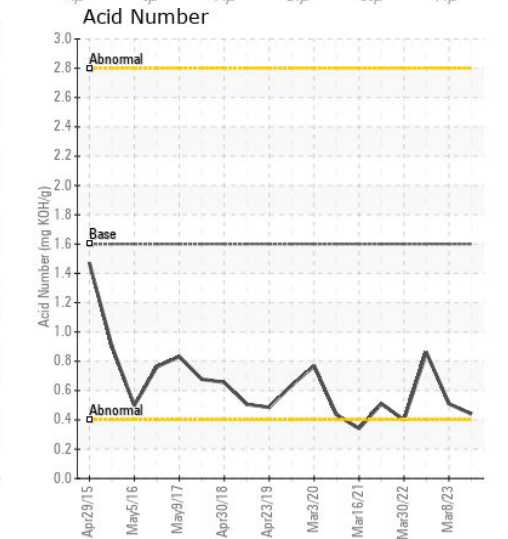
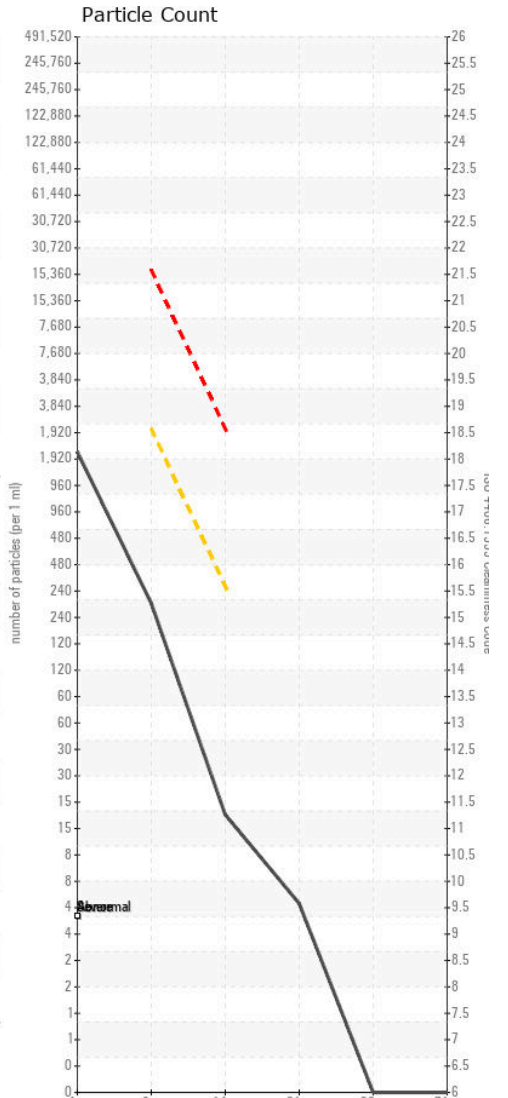
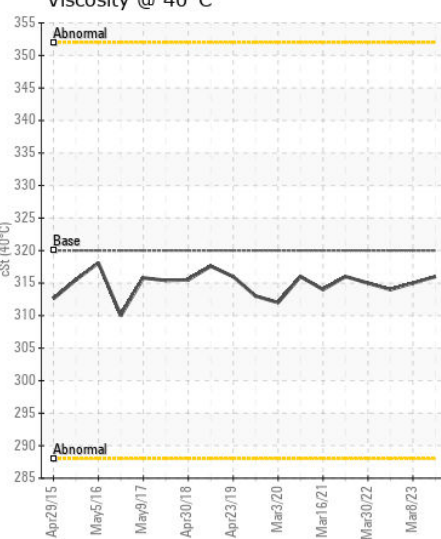
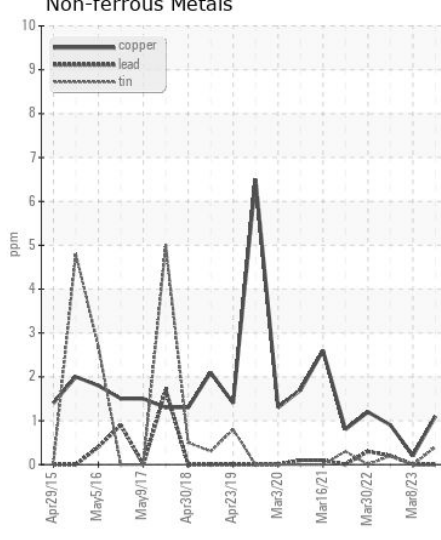
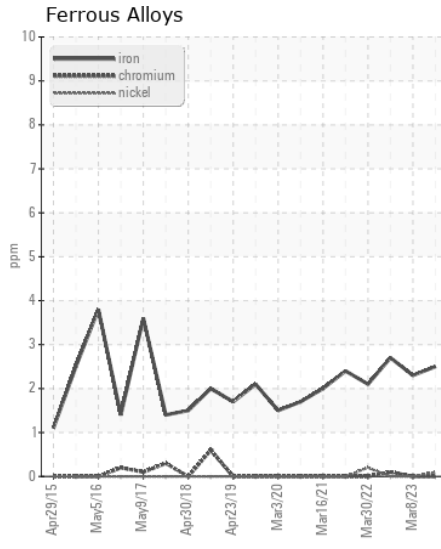
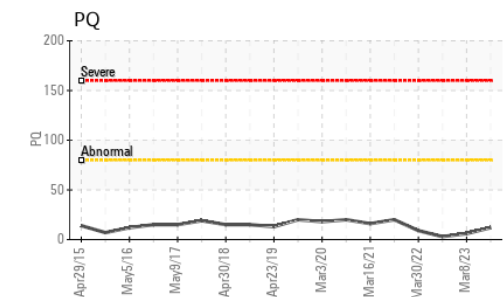
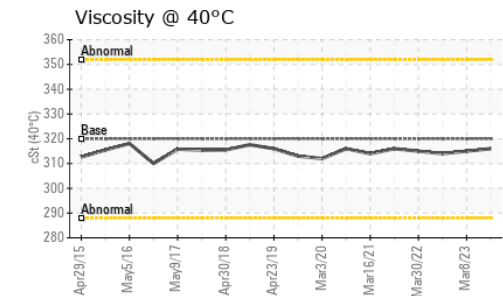
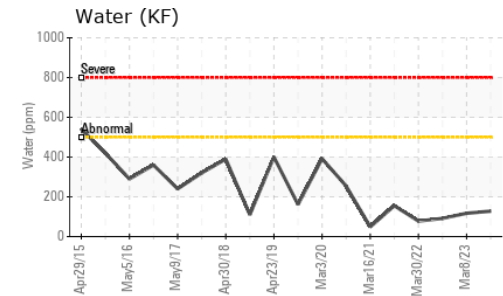
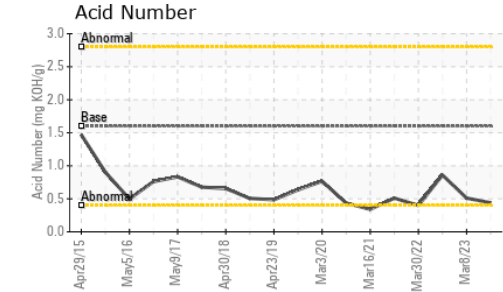
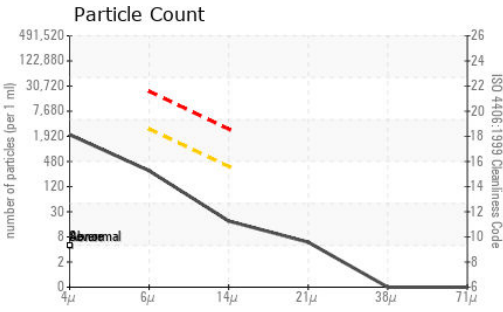
There is no indication of any contamination in the component. The amount and size of particulates present in the system is acceptable.

Silicon	ppm	ASTM D5185m	>50	<b>7</b>	8	7
Potassium	ppm	ASTM D5185m	>20	<b>1</b>	0	<1
Water	%	ASTM D6304	>0.05	<b>0.012</b>	0.011	0.009
ppm Water	ppm	ASTM D6304	>500	<b>128</b>	117.3	91.3
Particles >4µm		ASTM D7647		<b>1848</b>	208	236
Particles >6µm		ASTM D7647	>2500	<b>254</b>	64	61
Particles >14µm		ASTM D7647	>320	<b>16</b>	10	7
Particles >21µm		ASTM D7647	>80	<b>5</b>	4	1
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>18/15/11</b>	15/13/10	15/13/10
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

## FLUID CONDITION

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m	>20	<b>6</b>	6	7
Boron	ppm	ASTM D5185m		<b>19</b>	0	32
Barium	ppm	ASTM D5185m		<b>2</b>	0	2
Molybdenum	ppm	ASTM D5185m	1150	<b>530</b>	551	516
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	<1	<1
Magnesium	ppm	ASTM D5185m		<b>6</b>	8	6
Calcium	ppm	ASTM D5185m	2000	<b>1044</b>	1129	1034
Phosphorus	ppm	ASTM D5185m	400	<b>279</b>	295	264
Zinc	ppm	ASTM D5185m	0	<b>0</b>	0	1
Sulfur	ppm	ASTM D5185m	1850	<b>1449</b>	1417	1591
Acid Number (AN)	mg KOH/g	ASTM D8045	1.6	<b>0.44</b>	0.51	0.86
Visc @ 40°C	cSt	ASTM D445	320	<b>316</b>	315	314



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : NX012337  
**Lab Number** : 06097725  
**Unique Number** : 10890578  
**Test Package** : IND 2 ( Additional Tests: KF, PQ, PrtCount )

**NORDEX USA - Chicago**  
 300 SOUTH WACKER DRIVE, SUITE 1500  
 CHICAGO, IL  
 US 60606

Received : 22 Feb 2024  
 Tested : 23 Feb 2024  
 Diagnosed : 25 Feb 2024 - Doug Bogart  
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