



# OIL ANALYSIS REPORT

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

Area  
**FOUR MILE RIDGE [200005315]**

Machine Id  
**83442 SITE 9**

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>NX012339</b>	NX012352	NX010440
Sample Date		Client Info		<b>17 Nov 2023</b>	30 Mar 2023	11 Oct 2022
Machine Age	hrs	Client Info		<b>70750</b>	64518	61948
Oil Age	hrs	Client Info		<b>70750</b>	64518	61948
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>15</b>	15	9
Iron	ppm	ASTM D5185m	>150	<b>0</b>	<1	1
Chromium	ppm	ASTM D5185m	>5	<b>0</b>	0	<1
Nickel	ppm	ASTM D5185m	>10	<b>0</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>6</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	0
Vanadium	ppm	ASTM D5185m		<b>&lt;1</b>	0	<1
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE

## CONTAMINATION

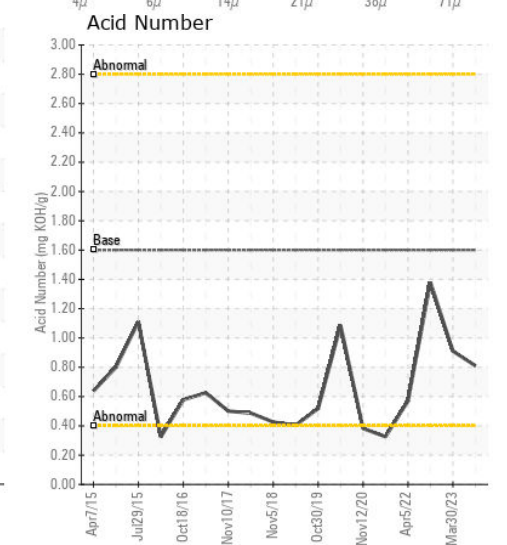
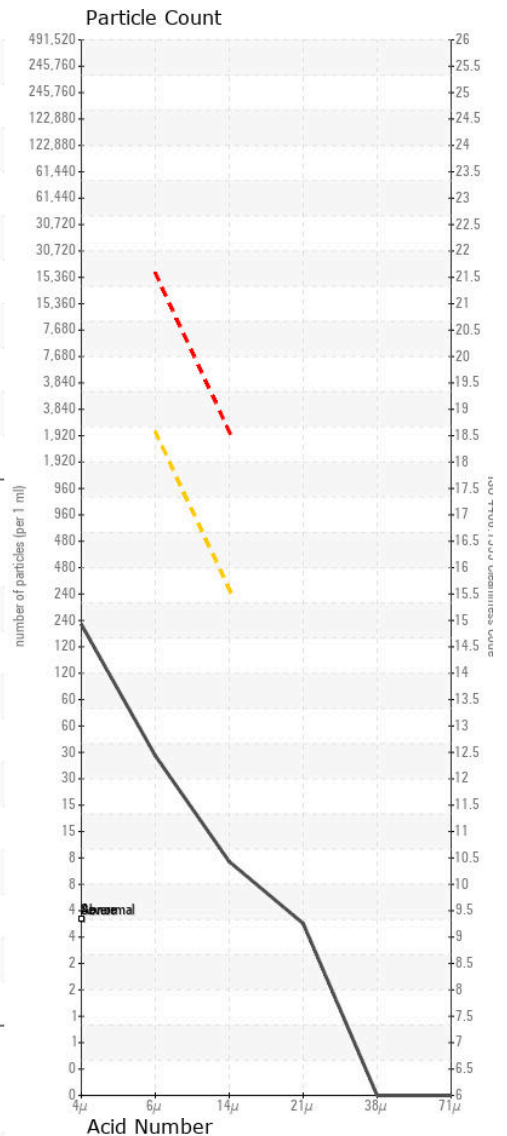
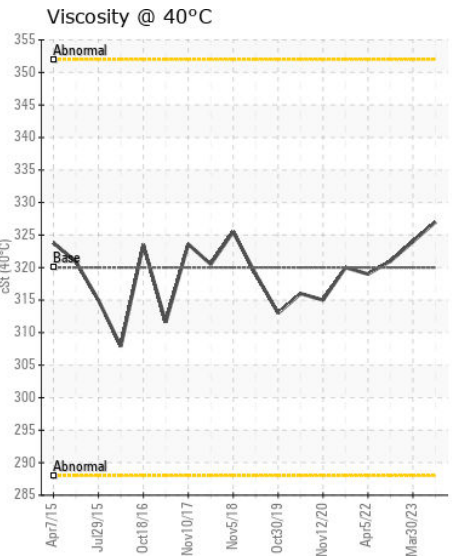
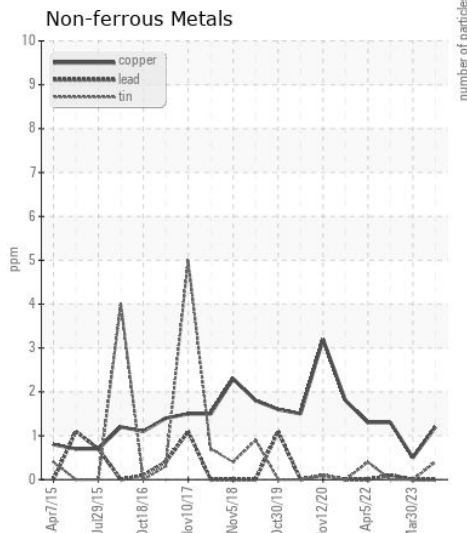
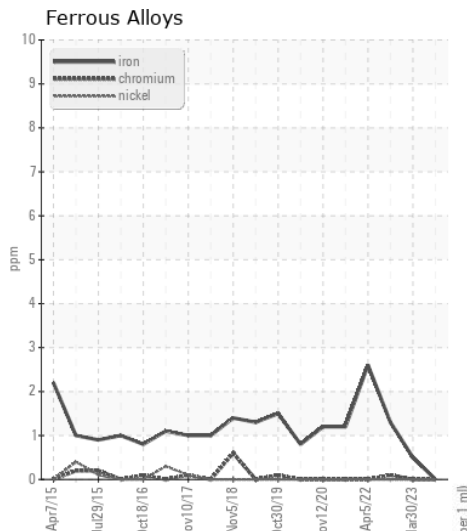
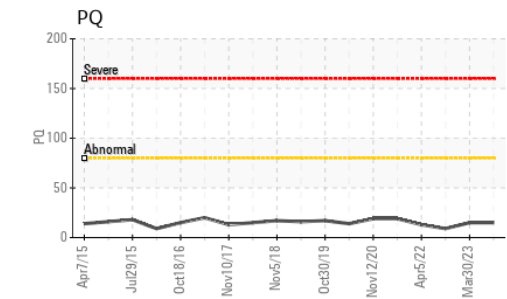
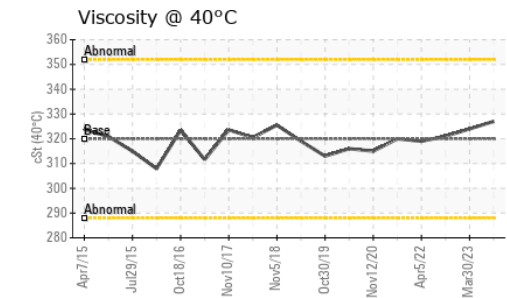
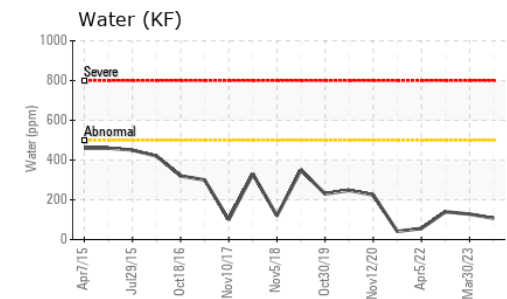
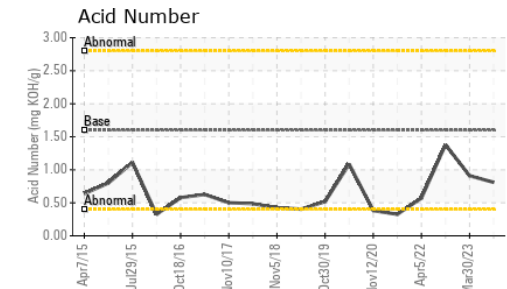
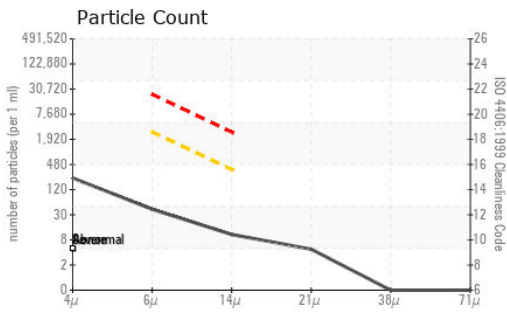
There is no indication of any contamination in the component. The amount and size of particulates present in the system is acceptable.

Silicon	ppm	ASTM D5185m	>50	<b>9</b>	11	9
Potassium	ppm	ASTM D5185m	>20	<b>0</b>	0	0
Water	%	ASTM D6304	>0.05	<b>0.010</b>	0.012	0.013
ppm Water	ppm	ASTM D6304	>500	<b>107</b>	128.1	139.6
Particles >4µm		ASTM D7647		<b>201</b>	480	456
Particles >6µm		ASTM D7647	>2500	<b>36</b>	90	87
Particles >14µm		ASTM D7647	>320	<b>9</b>	7	7
Particles >21µm		ASTM D7647	>80	<b>4</b>	2	2
Particles >38µm		ASTM D7647	>20	<b>0</b>	0	1
Particles >71µm		ASTM D7647	>4	<b>0</b>	0	0
Oil Cleanliness		ISO 4406 (c)	--/18/15	<b>15/12/10</b>	16/14/10	16/14/10
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>5</b>	5	7
Boron	ppm	ASTM D5185m		<b>29</b>	0	47
Barium	ppm	ASTM D5185m		<b>1</b>	0	2
Molybdenum	ppm	ASTM D5185m	1150	<b>786</b>	768	740
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	<1	<1
Magnesium	ppm	ASTM D5185m		<b>9</b>	10	8
Calcium	ppm	ASTM D5185m	2000	<b>1540</b>	1503	1484
Phosphorus	ppm	ASTM D5185m	400	<b>324</b>	337	314
Zinc	ppm	ASTM D5185m	0	<b>0</b>	0	<1
Sulfur	ppm	ASTM D5185m	1850	<b>1878</b>	1870	2078
Acid Number (AN)	mg KOH/g	ASTM D8045	1.6	<b>0.81</b>	0.91	1.38
Visc @ 40°C	cSt	ASTM D445	320	<b>327</b>	324	321



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : NX012339

Lab Number : 06097714

Unique Number : 10890567

Test Package : IND 2 ( Additional Tests: KF, PQ, PrtCount )

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)

Received : 22 Feb 2024

Tested : 23 Feb 2024

Diagnosed : 25 Feb 2024 - Doug Bogart

NORDEX USA - Chicago

300 SOUTH WACKER DRIVE, SUITE 1500

CHICAGO, IL

US 60606

Contact: DEVIN LINEHAN

DLinehan@nordex-online.com

T: (312)386-4124

F: (312)386-7102