



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Area
FOUR MILE RIDGE [200005315]

Machine Id
83441 SITE 10

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		NX012354	NX004194	NX010441
Sample Date		Client Info		01 Dec 2023	09 Mar 2023	24 Oct 2022
Machine Age	hrs	Client Info		68346	62118	59533
Oil Age	hrs	Client Info		68346	62118	59533
Filter Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Not Changed	Not Changed	Not Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL

WEAR

All component wear rates are normal.

PQ		ASTM D8184	>80	10	13	7
Iron	ppm	ASTM D5185m	>150	<1	1	3
Chromium	ppm	ASTM D5185m	>5	0	0	<1
Nickel	ppm	ASTM D5185m	>10	0	0	0
Titanium	ppm	ASTM D5185m	>10	0	0	0
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>10	6	<1	0
Lead	ppm	ASTM D5185m	>20	0	0	<1
Copper	ppm	ASTM D5185m	>50	1	1	2
Tin	ppm	ASTM D5185m	>10	<1	0	<1
Vanadium	ppm	ASTM D5185m		<1	<1	<1
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

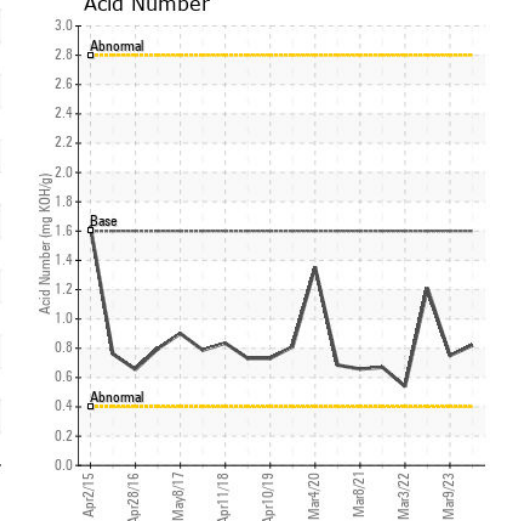
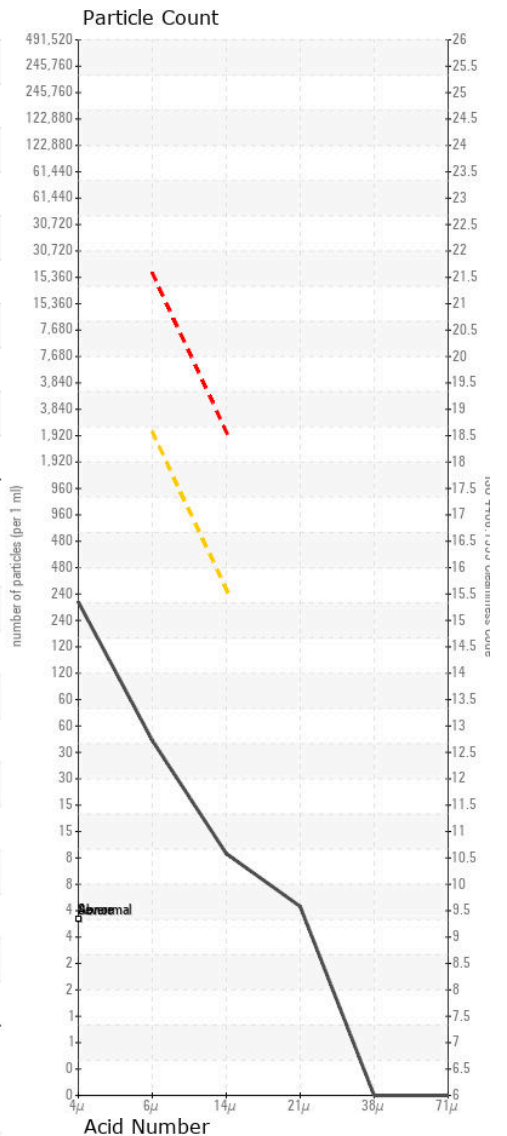
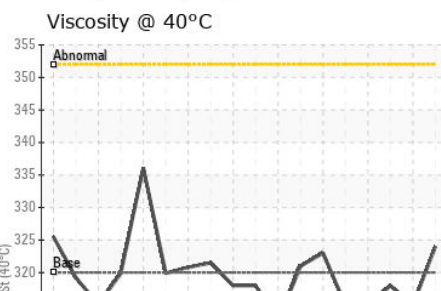
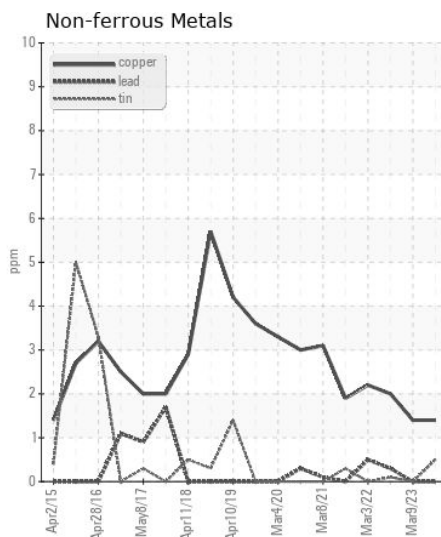
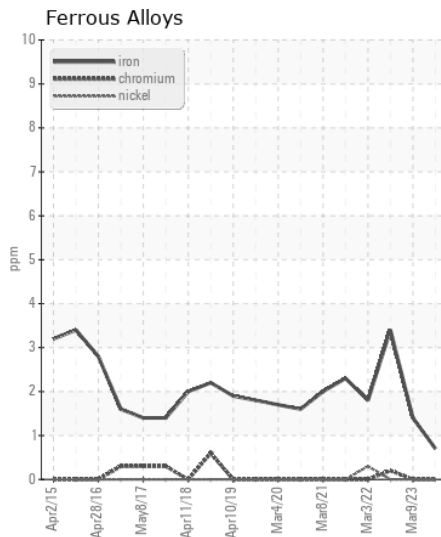
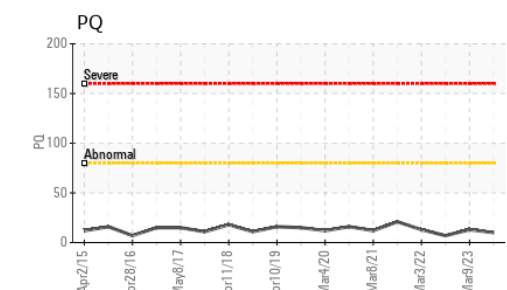
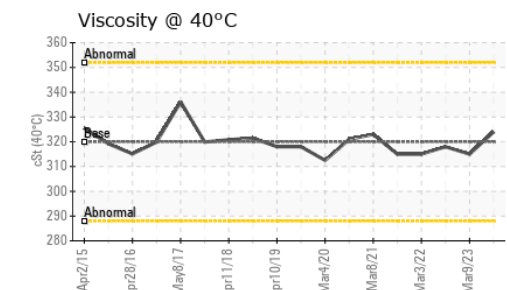
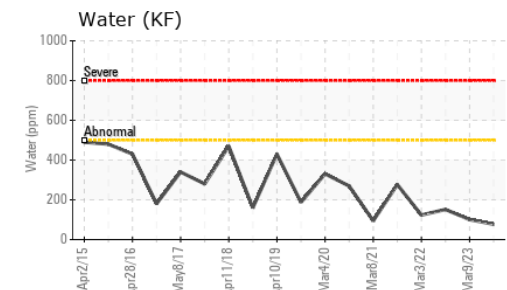
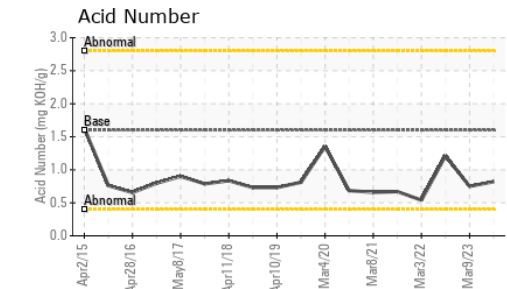
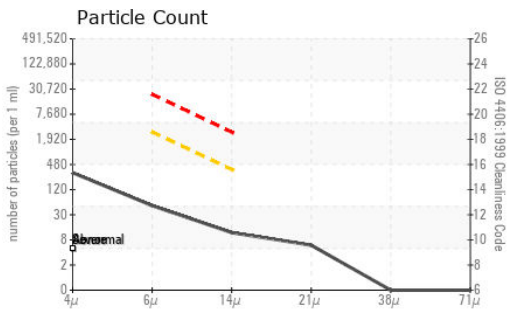
There is no indication of any contamination in the component. The amount and size of particulates present in the system is acceptable.

Silicon	ppm	ASTM D5185m	>50	10	10	10
Potassium	ppm	ASTM D5185m	>20	<1	0	<1
Water	%	ASTM D6304	>0.05	0.007	0.010	0.015
ppm Water	ppm	ASTM D6304	>500	77	100.6	151.5
Particles >4µm		ASTM D7647		269	231	323
Particles >6µm		ASTM D7647	>2500	44	67	42
Particles >14µm		ASTM D7647	>320	10	14	2
Particles >21µm		ASTM D7647	>80	5	5	0
Particles >38µm		ASTM D7647	>20	0	0	0
Particles >71µm		ASTM D7647	>4	0	0	0
Oil Cleanliness		ISO 4406 (c)	--/18/15	15/13/10	15/13/11	16/13/9
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.05	NEG	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	5	5	7
Boron	ppm	ASTM D5185m		29	0	45
Barium	ppm	ASTM D5185m		1	0	2
Molybdenum	ppm	ASTM D5185m	1150	762	683	714
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		8	9	8
Calcium	ppm	ASTM D5185m	2000	1412	1284	1349
Phosphorus	ppm	ASTM D5185m	400	353	287	333
Zinc	ppm	ASTM D5185m	0	0	0	1
Sulfur	ppm	ASTM D5185m	1850	1810	1394	2021
Acid Number (AN)	mg KOH/g	ASTM D8045	1.6	0.82	0.75	1.21
Visc @ 40°C	cSt	ASTM D445	320	324	315	318



Certificate L2367

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

Sample No. : NX012354

Lab Number : 06097719

Unique Number : 10890572

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

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

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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)