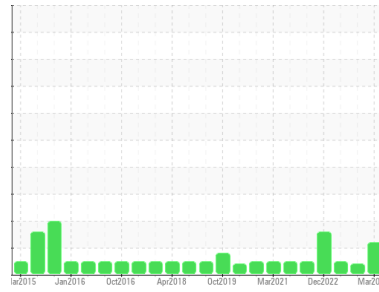




OIL ANALYSIS REPORT

Sample Rating Trend



VISUAL METAL



Area

FOUR MILE RIDGE [200009521]

Machine Id

83440 SITE 15

Component

Wind Turbine Gearbox

Fluid

CASTROL OPTIGEAR SYNTHETIC X 320 (--- LTR)

DIAGNOSIS

Recommendation

The filter change at the time of sampling has been noted. Resample at the next service interval to monitor. We were unable to perform a particle count due to metal particles present in this sample.

Wear

Moderate concentration of visible metal present. All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

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		NX012317	NX012359	NX004210
Sample Date	Client Info		28 Mar 2024	05 Oct 2023	03 Apr 2023
Machine Age	hrs	Client Info	71712	68284	62805
Oil Age	hrs	Client Info	71712	68284	62805
Oil Changed	Client Info		Not Changed	Not Changed	Not Changed
Sample Status			ABNORMAL	ABNORMAL	NORMAL

WEAR METALS

	method	limit/base	current	history1	history2	
PQ	ASTM D8184	>80	58	13	14	
Iron	ppm	ASTM D5185m	>150	5	4	1
Chromium	ppm	ASTM D5185m	>5	<1	0	0
Nickel	ppm	ASTM D5185m	>10	<1	0	0
Titanium	ppm	ASTM D5185m	>10	<1	0	0
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>10	8	7	<1
Lead	ppm	ASTM D5185m	>20	0	0	0
Copper	ppm	ASTM D5185m	>50	2	1	<1
Tin	ppm	ASTM D5185m	>10	0	<1	0
Vanadium	ppm	ASTM D5185m		<1	<1	0
Cadmium	ppm	ASTM D5185m		<1	0	0

ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m		<1	36	0
Barium	ppm	ASTM D5185m		5	3	0
Molybdenum	ppm	ASTM D5185m	1150	855	918	649
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		6	10	9
Calcium	ppm	ASTM D5185m	2000	1712	1768	1234
Phosphorus	ppm	ASTM D5185m	400	355	367	321
Zinc	ppm	ASTM D5185m	0	<1	0	0
Sulfur	ppm	ASTM D5185m	1850	2196	2048	1532

CONTAMINANTS

	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>50	12	11	8
Sodium	ppm	ASTM D5185m	>20	2	1	5
Potassium	ppm	ASTM D5185m	>20	1	<1	0
Water	%	ASTM D6304	>0.05	0.014	0.023	0.017
ppm Water	ppm	ASTM D6304	>500	141	231	174.5

FLUID CLEANLINESS

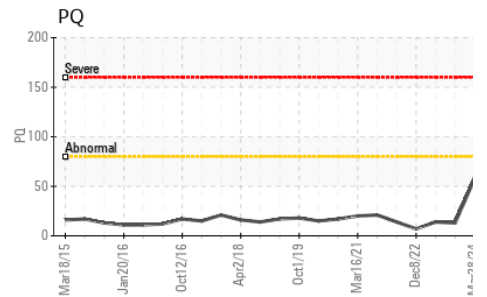
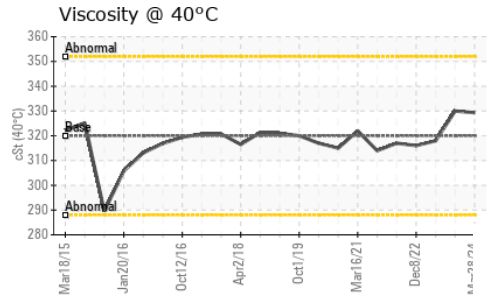
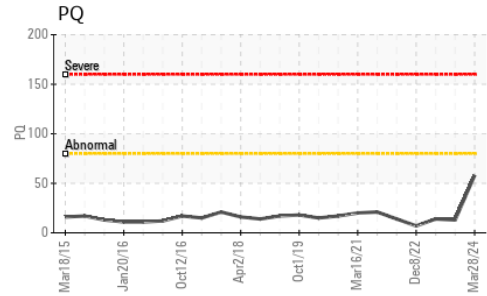
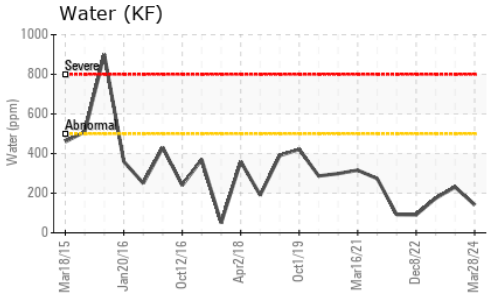
	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		---	---	4778
Particles >6µm	ASTM D7647	>2500	---	---	849
Particles >14µm	ASTM D7647	>320	---	---	57
Particles >21µm	ASTM D7647	>80	---	---	14
Particles >38µm	ASTM D7647	>20	---	---	1
Particles >71µm	ASTM D7647	>4	---	---	0
Oil Cleanliness	ISO 4406 (c)	>--/18/15	---	---	19/17/13

FLUID DEGRADATION

	method	limit/base	current	history1	history2	
Acid Number (AN)	mg KOH/g	ASTM D8045	1.6	0.99	1.19	0.67



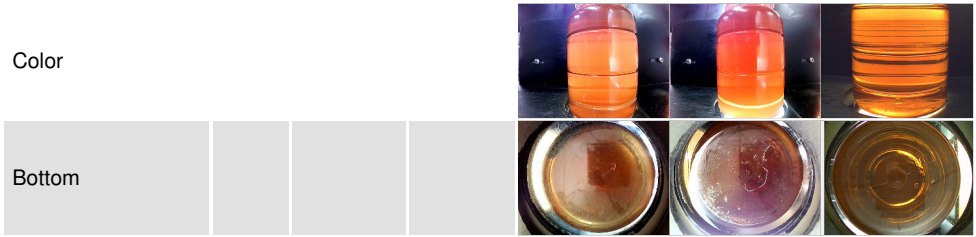
OIL ANALYSIS REPORT



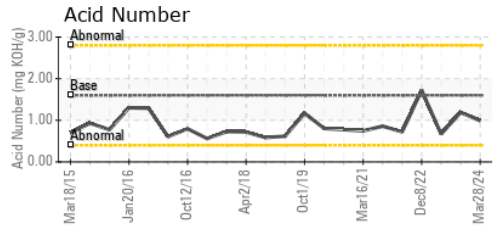
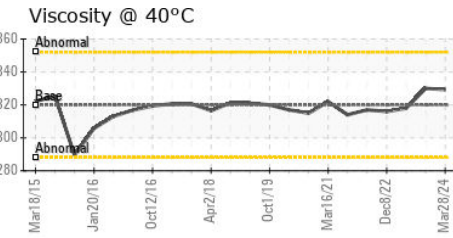
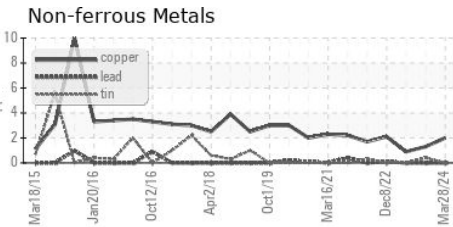
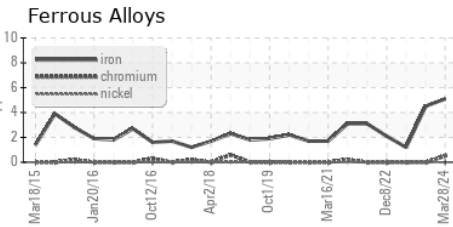
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	▲ MODER	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	▲ MODER	NONE
Appearance	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

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	320	329.3	330

SAMPLE IMAGES	method	limit/base	current	history1	history2
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GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : NX012317
Lab Number : **06211618**
Unique Number : 11084482
Test Package : IND 2 (Additional Tests: KF, PQ, PrtCount)

NORDEX USA - Chicago
 300 SOUTH WACKER DRIVE, SUITE 1500
 CHICAGO, IL 60606
 Contact: DEVIN LINEHAN
 DLinehan@nordex-online.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)

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