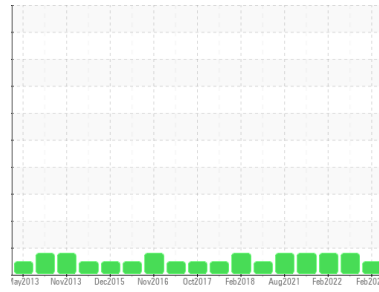




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area
BEEBE [2000060080]

Machine Id
01WEA82345

Component
Wind Turbine Gearbox

Fluid
CASTROL OPTIGEAR SYNTHETIC X 320 (4 LTR)

DIAGNOSIS

Recommendation

No corrective action is recommended at this time. We recommend an early resample to monitor this condition.

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		NX06146575	NX05840672	NX05473535
Sample Date	Client Info		01 Feb 2024	21 Mar 2023	07 Feb 2022
Machine Age	hrs	Client Info	95837	85174	65838
Oil Age	hrs	Client Info	0	0	0
Oil Changed	Client Info		N/A	N/A	N/A
Sample Status			NORMAL	ABNORMAL	ABNORMAL

WEAR METALS

	method	limit/base	current	history1	history2	
PQ	ASTM D8184	>80	20	58	75	
Iron	ppm	ASTM D5185m	>150	24	▲ 194	▲ 195
Chromium	ppm	ASTM D5185m	>5	<1	1	2
Nickel	ppm	ASTM D5185m	>10	1	1	1
Titanium	ppm	ASTM D5185m	>10	<1	0	0
Silver	ppm	ASTM D5185m		<1	0	<1
Aluminum	ppm	ASTM D5185m	>10	7	1	<1
Lead	ppm	ASTM D5185m	>20	<1	0	<1
Copper	ppm	ASTM D5185m	>50	1	1	1
Tin	ppm	ASTM D5185m	>10	<1	0	0
Antimony	ppm	ASTM D5185m	>5	---	---	<1
Vanadium	ppm	ASTM D5185m		<1	0	<1
Cadmium	ppm	ASTM D5185m		1	0	0

ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m		0	0	19
Barium	ppm	ASTM D5185m		4	0	0
Molybdenum	ppm	ASTM D5185m	1150	972	824	798
Manganese	ppm	ASTM D5185m		1	2	2
Magnesium	ppm	ASTM D5185m		7	16	24
Calcium	ppm	ASTM D5185m	2000	1713	1576	1713
Phosphorus	ppm	ASTM D5185m	400	326	320	382
Zinc	ppm	ASTM D5185m	0	<1	6	4
Sulfur	ppm	ASTM D5185m	1850	1813	2064	1776

CONTAMINANTS

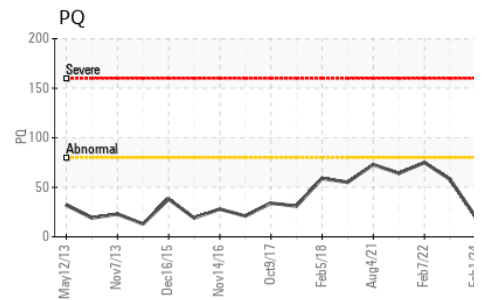
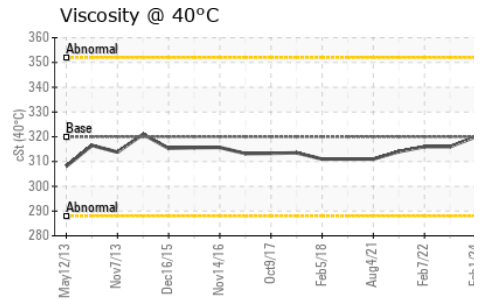
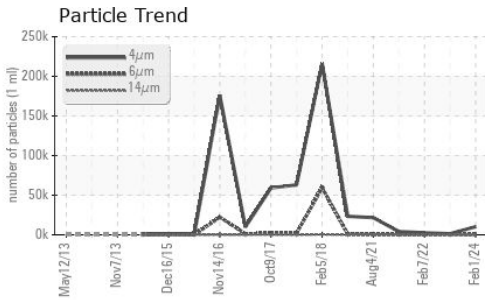
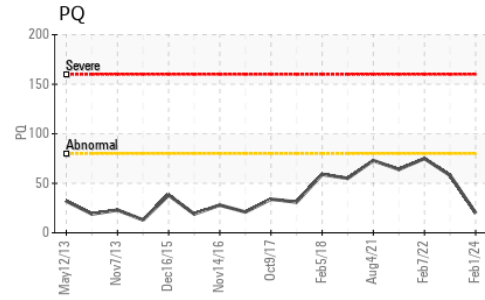
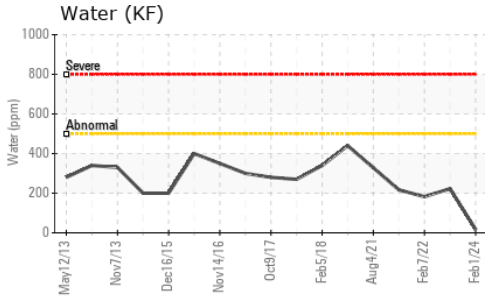
	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>50	14	10	9
Sodium	ppm	ASTM D5185m	>20	0	3	5
Potassium	ppm	ASTM D5185m	>20	1	2	<1
Water	%	ASTM D6304	>0.05	0.002	0.022	0.018
ppm Water	ppm	ASTM D6304	>500	17	222.8	182.3

FLUID CLEANLINESS

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		10177	1380	2614
Particles >6µm	ASTM D7647	>2500	12	183	147
Particles >14µm	ASTM D7647	>320	3	6	11
Particles >21µm	ASTM D7647	>80	1	1	2
Particles >38µm	ASTM D7647	>20	0	0	0
Particles >71µm	ASTM D7647	>4	0	0	0
Oil Cleanliness	ISO 4406 (c)	>--/18/15	21/11/9	18/15/10	19/14/11



OIL ANALYSIS REPORT

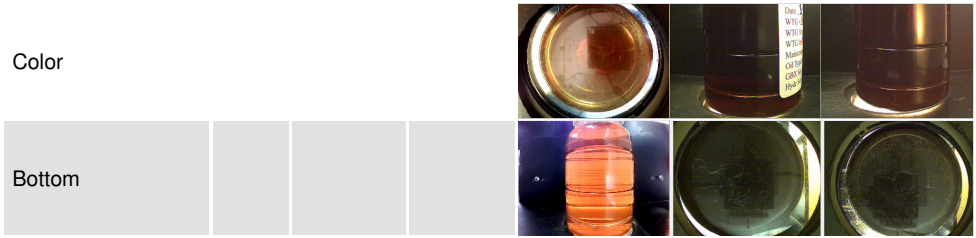


FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	1.6	1.13	0.53	0.40

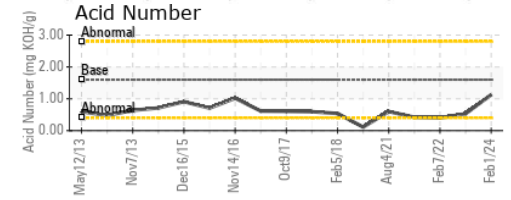
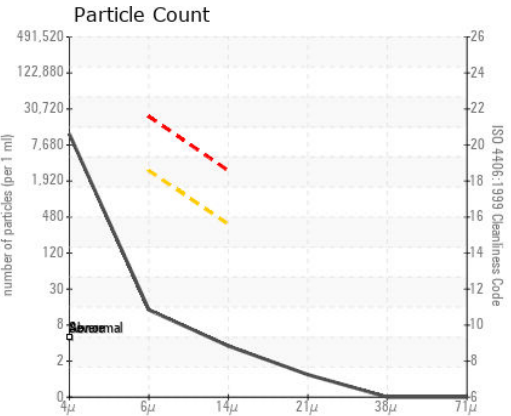
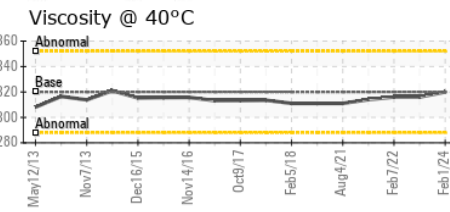
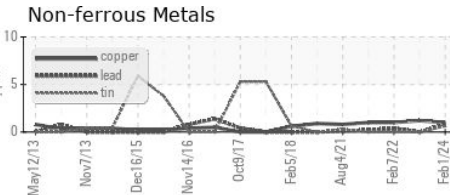
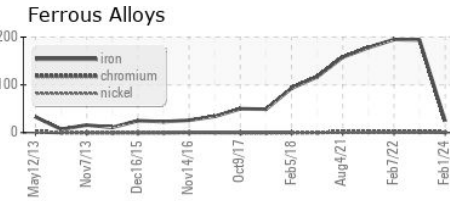
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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
Free Water	scalar	*Visual		NEG	NEG	NEG

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	320	320	316	316

SAMPLE IMAGES		method	limit/base	current	history1	history2
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GRAPHS



Certificate L2367

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

Sample No. : NX06146575

Lab Number : 06146575

Unique Number : 10976653

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 : 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

T:

F: (312)386-7102