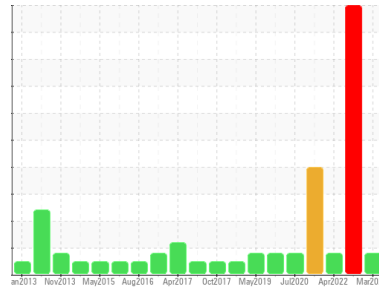




OIL ANALYSIS REPORT

Sample Rating Trend



ISO



Area
BEEBE [2000060080]

Machine Id
06WEA82340

Component
Wind Turbine Gearbox

Fluid
CASTROL OPTIGEAR SYNTHETIC X 320 (4 LTR)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is a high amount of silt (particulates < 14 microns in size) present 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	NX06146573	NX05798677	NX05536332	
Sample Date	Client Info	12 Mar 2024	21 Mar 2023	28 Apr 2022	
Machine Age	hrs	Client Info	1584	73259	68100
Oil Age	hrs	Client Info	0	0	0
Oil Changed	Client Info	N/A	N/A	N/A	
Sample Status		ABNORMAL	SEVERE	ABNORMAL	

WEAR METALS

method	limit/base	current	history1	history2
PQ	ASTM D8184 >80	44	▲ 287	133
Iron	ppm ASTM D5185m >150	127	▲ 865	▲ 516
Chromium	ppm ASTM D5185m >5	2	▲ 8	5
Nickel	ppm ASTM D5185m >10	2	5	3
Titanium	ppm ASTM D5185m >10	<1	0	0
Silver	ppm ASTM D5185m	<1	0	<1
Aluminum	ppm ASTM D5185m >10	7	2	1
Lead	ppm ASTM D5185m >20	<1	0	<1
Copper	ppm ASTM D5185m >50	2	4	2
Tin	ppm ASTM D5185m >10	<1	0	0
Antimony	ppm ASTM D5185m >5	---	---	---
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	22
Barium	ppm ASTM D5185m	4	2	0
Molybdenum	ppm ASTM D5185m 1150	951	819	788
Manganese	ppm ASTM D5185m	2	7	4
Magnesium	ppm ASTM D5185m	7	12	15
Calcium	ppm ASTM D5185m 2000	1763	1662	1715
Phosphorus	ppm ASTM D5185m 400	366	324	362
Zinc	ppm ASTM D5185m 0	1	9	2
Sulfur	ppm ASTM D5185m 1850	2095	1698	1531

CONTAMINANTS

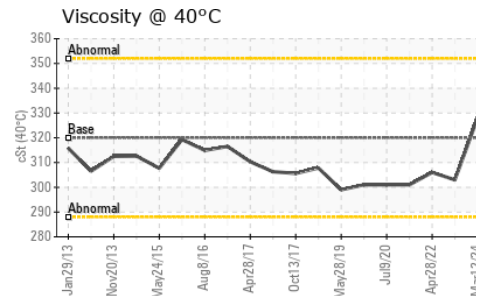
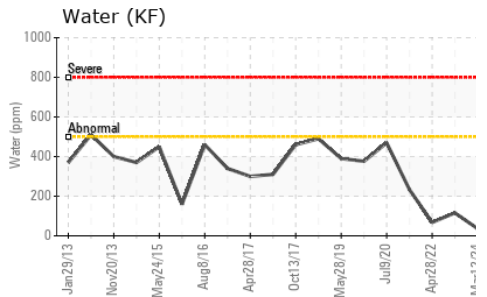
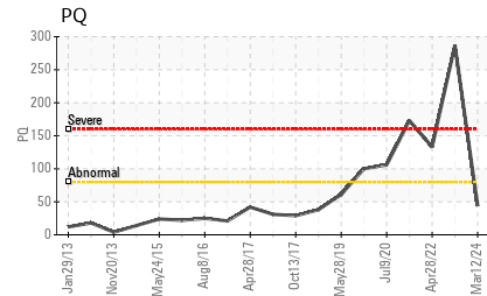
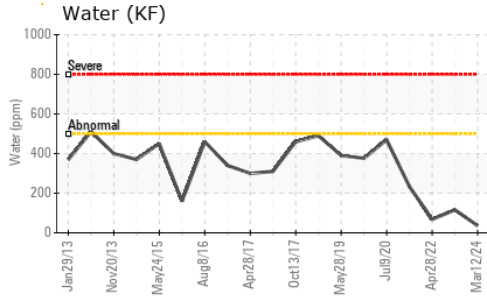
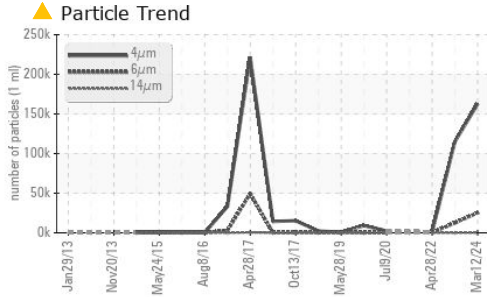
method	limit/base	current	history1	history2
Silicon	ppm ASTM D5185m >50	15	14	10
Sodium	ppm ASTM D5185m >20	<1	0	6
Potassium	ppm ASTM D5185m >20	1	<1	0
Water	% ASTM D6304 >0.05	0.003	0.011	0.006
ppm Water	ppm ASTM D6304 >500	36	115.9	67.6

FLUID CLEANLINESS

method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	162556	115027	1211
Particles >6µm	ASTM D7647 >2500	▲ 25374	▲ 12581	338
Particles >14µm	ASTM D7647 >320	72	52	55
Particles >21µm	ASTM D7647 >80	10	5	15
Particles >38µm	ASTM D7647 >20	0	0	0
Particles >71µm	ASTM D7647 >4	0	0	0
Oil Cleanliness	ISO 4406 (c) >--/18/15	▲ 25/22/13	▲ 24/21/13	17/16/13



OIL ANALYSIS REPORT

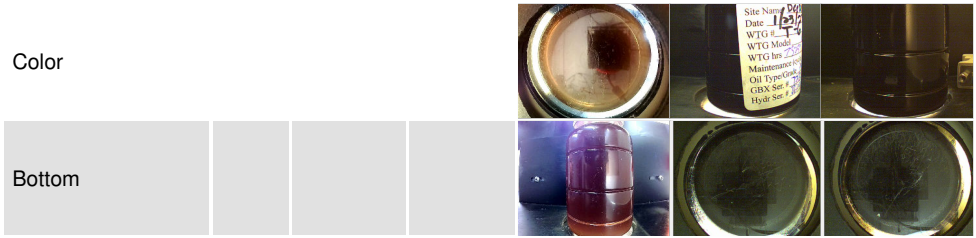


FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	1.6	1.05	0.17	0.37

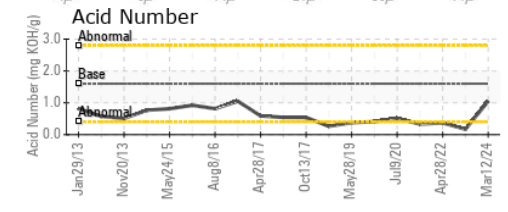
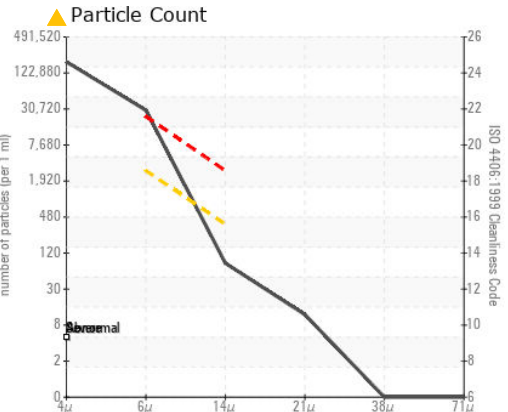
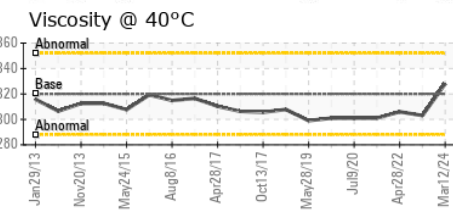
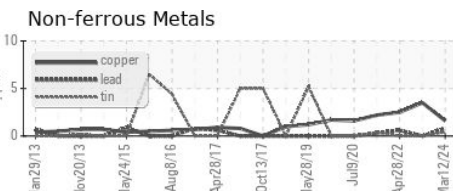
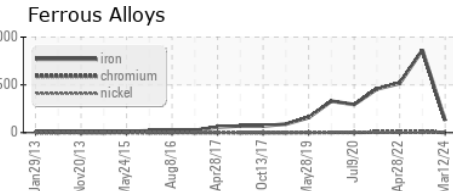
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	VLITE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	VLITE
Sand/Dirt	scalar	*Visual	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	328	303	306

SAMPLE IMAGES		method	limit/base	current	history1	history2
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GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : NX06146573
Lab Number : 06146573
Unique Number : 10976651
Test Package : IND 2 (Additional Tests: KF, PQ, PrtCount)

NORDEX USA - BEEBE
 1200 S COUNTY FARM RD
 ITHACA, MI
 US 48847
 Contact: TUCKER WITT
 tucker.witt@constellation.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)