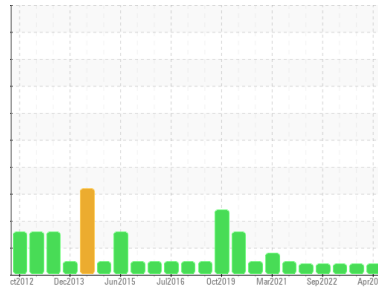




OIL ANALYSIS REPORT

Sample Rating Trend



ADDITIVES



Area
ROTH ROCK [200005321]

Machine Id
03WEA81555

Component
Wind Turbine Gearbox

Fluid
CASTROL OPTIGEAR SYNTHETIC A ISO 320 (--- LTR)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

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

Fluid Condition

Additive levels indicate the addition of a different brand, or type of oil. The AN level is acceptable for this fluid.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		NX016942	NX013870	NX012185
Sample Date	Client Info		30 Apr 2024	16 Oct 2023	10 May 2023
Machine Age	hrs	Client Info	0	0	0
Oil Age	hrs	Client Info	0	0	0
Oil Changed	Client Info		N/A	N/A	N/A
Sample Status			ATTENTION	ATTENTION	ATTENTION

WEAR METALS

	method	limit/base	current	history1	history2	
PQ	ASTM D8184	>80	16	19	18	
Iron	ppm	ASTM D5185m	>150	31	66	78
Chromium	ppm	ASTM D5185m	>5	<1	<1	1
Nickel	ppm	ASTM D5185m	>10	0	0	<1
Titanium	ppm	ASTM D5185m	>10	<1	0	<1
Silver	ppm	ASTM D5185m		<1	0	0
Aluminum	ppm	ASTM D5185m	>10	4	6	<1
Lead	ppm	ASTM D5185m	>20	<1	0	<1
Copper	ppm	ASTM D5185m	>50	<1	2	<1
Tin	ppm	ASTM D5185m	>10	<1	0	<1
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		<1	0	0

ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m	0	0	9	0
Barium	ppm	ASTM D5185m	0	0	0	0
Molybdenum	ppm	ASTM D5185m	1150	880	471	530
Manganese	ppm	ASTM D5185m		1	2	2
Magnesium	ppm	ASTM D5185m	1800	1835	1569	1574
Calcium	ppm	ASTM D5185m	20	150	14	13
Phosphorus	ppm	ASTM D5185m	1450	1346	1092	1119
Zinc	ppm	ASTM D5185m	1650	1436	1229	1246
Sulfur	ppm	ASTM D5185m	4900	6797	4832	5530

CONTAMINANTS

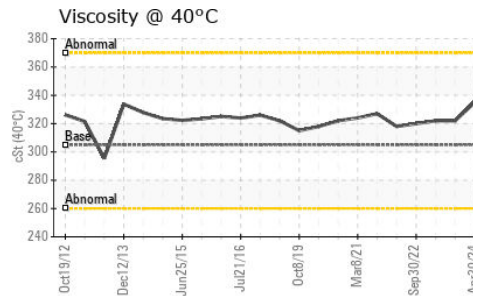
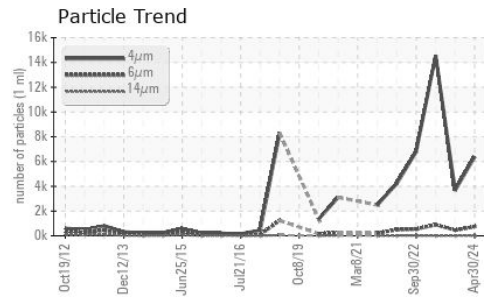
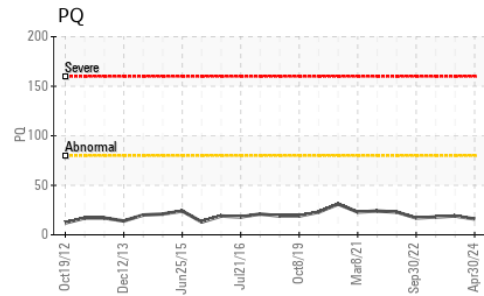
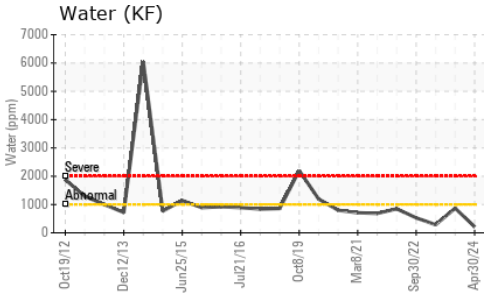
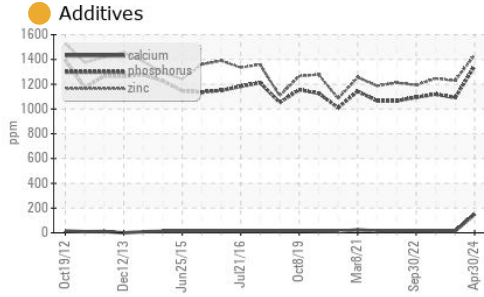
	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>50	12	9	9
Sodium	ppm	ASTM D5185m	>20	6	26	26
Potassium	ppm	ASTM D5185m	>20	0	0	2
Water	%	ASTM D6304	>0.1	0.021	0.086	0.028
ppm Water	ppm	ASTM D6304	>1000	215	870	286.7

FLUID CLEANLINESS

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		6372	3666	14567
Particles >6µm	ASTM D7647	>2500	743	454	900
Particles >14µm	ASTM D7647	>320	10	22	20
Particles >21µm	ASTM D7647	>80	2	8	5
Particles >38µm	ASTM D7647	>20	0	1	0
Particles >71µm	ASTM D7647	>4	0	0	0
Oil Cleanliness	ISO 4406 (c)	>--/18/15	20/17/10	19/16/12	21/17/11

FLUID DEGRADATION

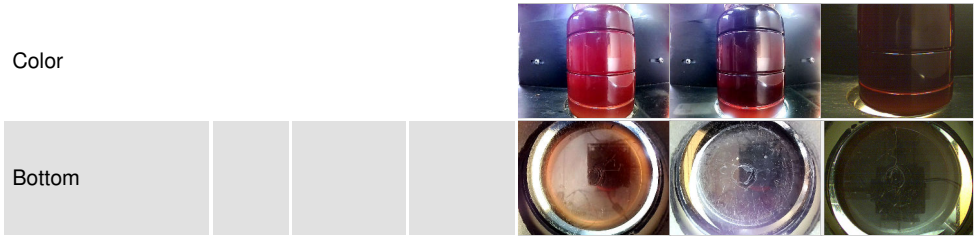
	method	limit/base	current	history1	history2	
Acid Number (AN)	mg KOH/g	ASTM D8045	3.3	2.47	2.35	1.32



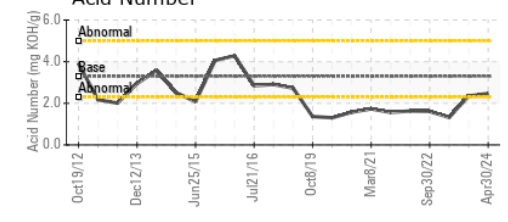
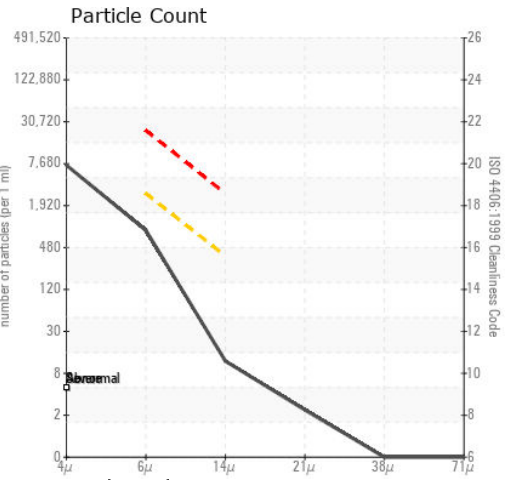
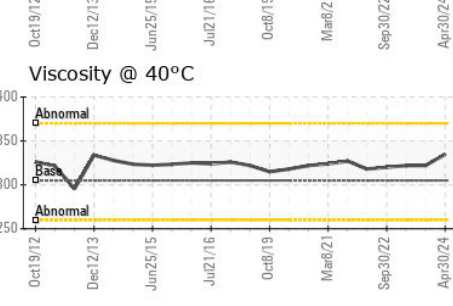
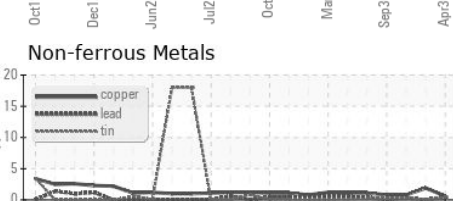
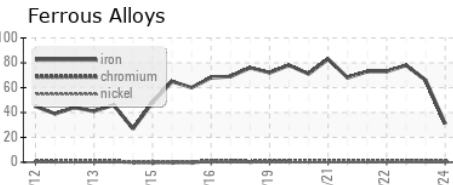
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445 305	335	322	322

SAMPLE IMAGES	method	limit/base	current	history1	history2
---------------	--------	------------	---------	----------	----------



GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : NX016942 **Received** : 17 May 2024
Lab Number : 06182836 **Tested** : 22 May 2024
Unique Number : 11034162 **Diagnosed** : 22 May 2024 - Don Baldrige
Test Package : IND 2 (Additional Tests: KF, PQ, PrtCount)

NORDEX USA - ROTH ROCK
 300 SOUTH WACKER DRIVE, SUITE 1500
 CHICAGO, IL 60606
 Contact: ADAY MAGEC
 aday.magec@gestampren.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)