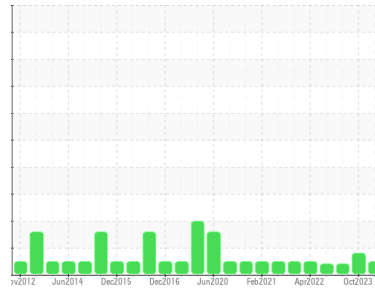




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area

ROTH ROCK [200005321]

Machine Id

08WEA81549

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

There is no indication of any contamination in the component. The amount and size of particulates present in the system is 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		NX013866	NX012218	NX012217
Sample Date	Client Info		07 May 2024	04 Oct 2023	05 Apr 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			NORMAL	ABNORMAL	ATTENTION

WEAR METALS

	method	limit/base	current	history1	history2	
PQ	ASTM D8184	>80	20	28	16	
Iron	ppm	ASTM D5185m	>150	41	17	52
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	5	▲ 15	<1
Lead	ppm	ASTM D5185m	>20	<1	0	<1
Copper	ppm	ASTM D5185m	>50	2	3	<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	26	0
Barium	ppm	ASTM D5185m	0	0	<1	0
Molybdenum	ppm	ASTM D5185m	1150	1082	1164	● 506
Manganese	ppm	ASTM D5185m		2	1	1
Magnesium	ppm	ASTM D5185m	1800	1915	1789	1537
Calcium	ppm	ASTM D5185m	20	17	19	12
Phosphorus	ppm	ASTM D5185m	1450	1432	1430	1117
Zinc	ppm	ASTM D5185m	1650	1583	1651	1248
Sulfur	ppm	ASTM D5185m	4900	7168	6097	5540

CONTAMINANTS

	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>50	14	18	8
Sodium	ppm	ASTM D5185m	>20	4	5	27
Potassium	ppm	ASTM D5185m	>20	3	2	3
Water	%	ASTM D6304	>0.1	0.023	0.085	0.038
ppm Water	ppm	ASTM D6304	>1000	238	855	380.7

FLUID CLEANLINESS

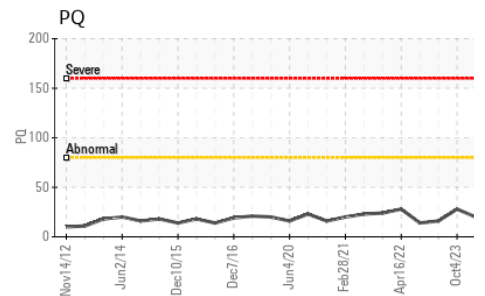
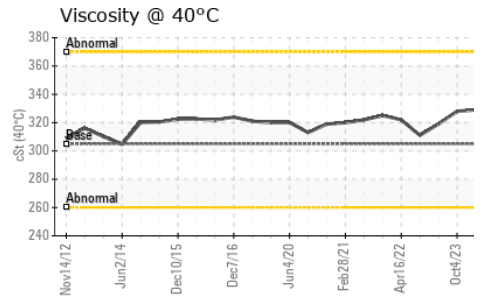
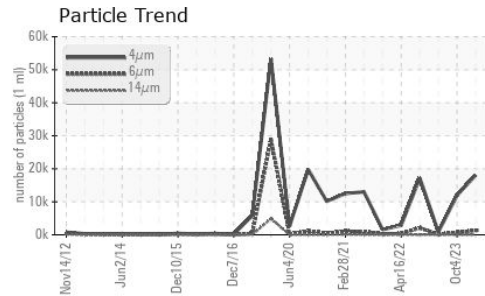
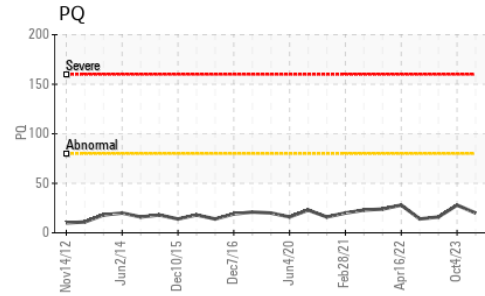
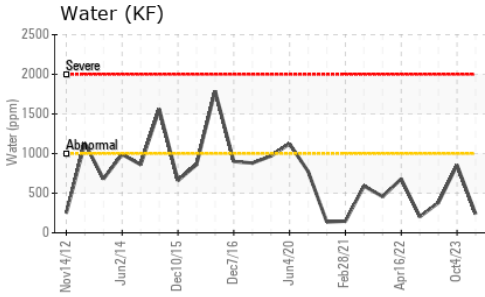
	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		18053	11929	896
Particles >6µm	ASTM D7647	>2500	1293	738	156
Particles >14µm	ASTM D7647	>320	13	7	14
Particles >21µm	ASTM D7647	>80	4	1	3
Particles >38µm	ASTM D7647	>20	1	0	0
Particles >71µm	ASTM D7647	>4	1	0	0
Oil Cleanliness	ISO 4406 (c)	>--/18/15	21/17/11	21/17/10	17/14/11

FLUID DEGRADATION

	method	limit/base	current	history1	history2	
Acid Number (AN)	mg KOH/g	ASTM D8045	3.3	2.58	3.15	1.53



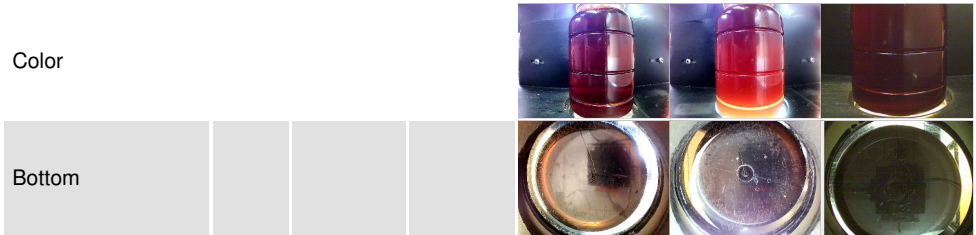
OIL ANALYSIS REPORT



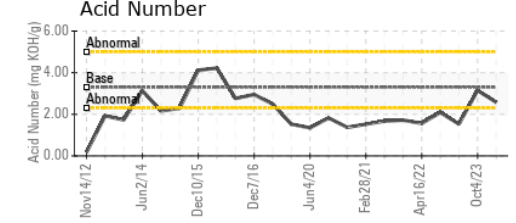
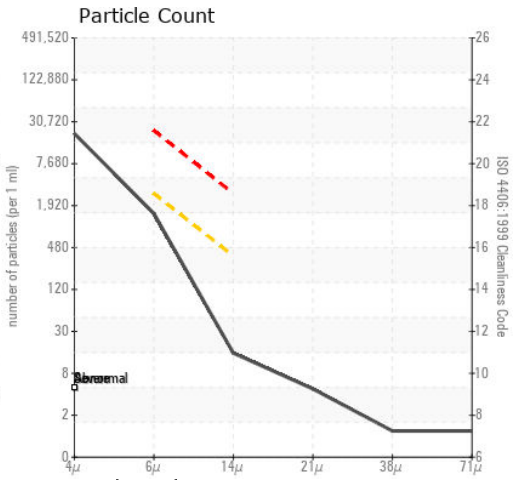
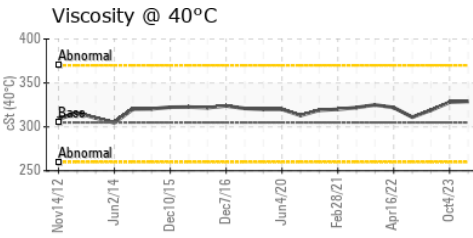
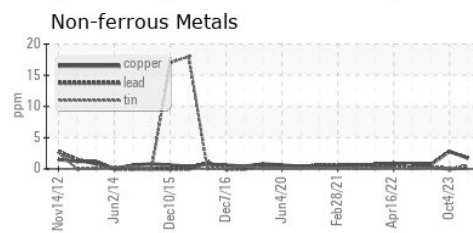
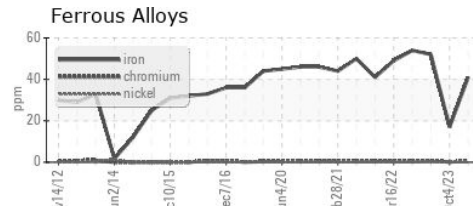
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	LIGHT
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	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	329	328

SAMPLE IMAGES	method	limit/base	current	history1	history2
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GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : NX013866 **Received** : 17 May 2024
Lab Number : 06182831 **Tested** : 22 May 2024
Unique Number : 11034157 **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
 US 60606
 Contact: ADAY MAGEC
 aday.magec@gestampren.com

Certificate L2367
 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)