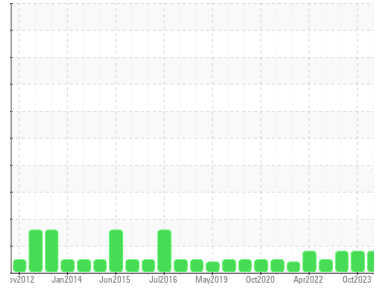




OIL ANALYSIS REPORT

Sample Rating Trend



ISO



Area
ROTH ROCK [200005321]
 Machine Id
07WEA81548
 Component
Wind Turbine Gearbox
 Fluid
CASTROL OPTIGEAR SYNTHETIC A ISO 320 (--- LTR)

DIAGNOSIS

Recommendation

No corrective action is recommended at this time. 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		NX016946	NX012223	NX012224
Sample Date	Client Info		01 May 2024	08 Oct 2023	11 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			ABNORMAL	ABNORMAL	ABNORMAL

WEAR METALS

	method	limit/base	current	history1	history2	
PQ	ASTM D8184	>80	22	19	16	
Iron	ppm	ASTM D5185m	>150	55	44	49
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	▲ 11	<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	18	0
Barium	ppm	ASTM D5185m	0	0	0	0
Molybdenum	ppm	ASTM D5185m	1150	811	830	915
Manganese	ppm	ASTM D5185m		2	2	2
Magnesium	ppm	ASTM D5185m	1800	1911	1748	1758
Calcium	ppm	ASTM D5185m	20	51	52	55
Phosphorus	ppm	ASTM D5185m	1450	1390	1297	1339
Zinc	ppm	ASTM D5185m	1650	1512	1511	1544
Sulfur	ppm	ASTM D5185m	4900	7036	5748	6590

CONTAMINANTS

	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>50	11	13	13
Sodium	ppm	ASTM D5185m	>20	13	16	16
Potassium	ppm	ASTM D5185m	>20	1	0	2
Water	%	ASTM D6304	>0.1	0.034	0.082	0.038
ppm Water	ppm	ASTM D6304	>1000	343	827	381.1

FLUID CLEANLINESS

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		73211	4741	---
Particles >6µm	ASTM D7647	>2500	▲ 16074	833	---
Particles >14µm	ASTM D7647	>320	218	26	---
Particles >21µm	ASTM D7647	>80	20	5	---
Particles >38µm	ASTM D7647	>20	0	1	---
Particles >71µm	ASTM D7647	>4	0	0	---
Oil Cleanliness	ISO 4406 (c)	>--/18/15	▲ 23/21/15	19/17/12	---

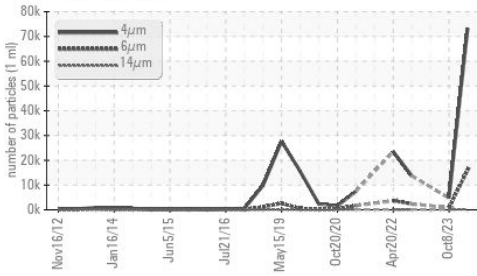
FLUID DEGRADATION

	method	limit/base	current	history1	history2	
Acid Number (AN)	mg KOH/g	ASTM D8045	3.3	2.16	3.00	1.91

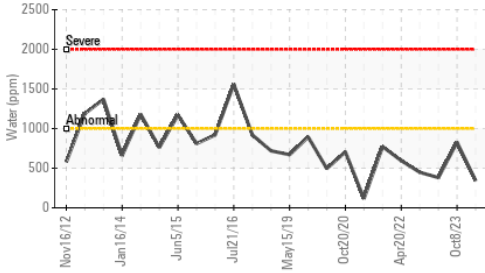


OIL ANALYSIS REPORT

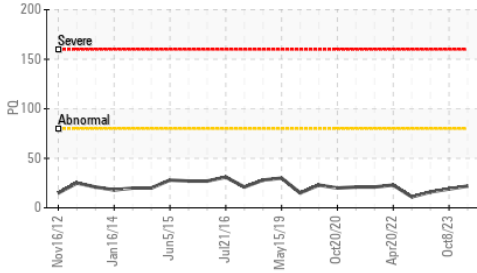
Particle Trend



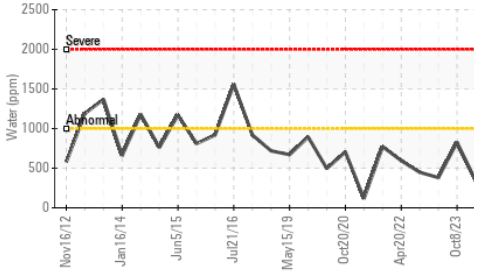
Water (KF)



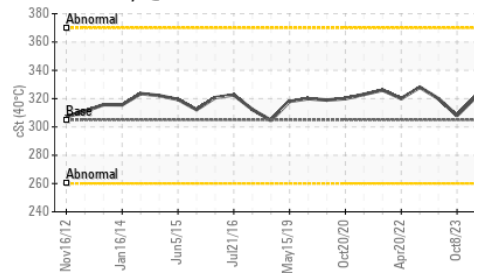
PQ



Water (KF)



Viscosity @ 40°C



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	▲ HEAVY
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	321	308

SAMPLE IMAGES	method	limit/base	current	history1	history2
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Color

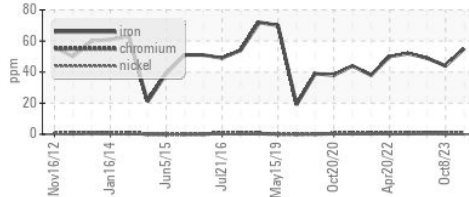


Bottom

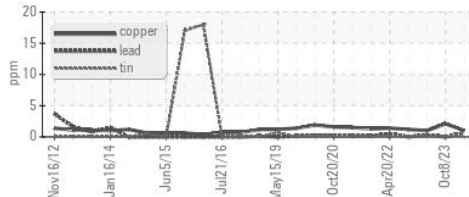


GRAPHS

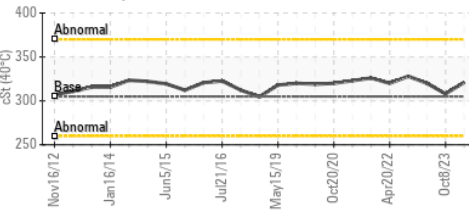
Ferrous Alloys



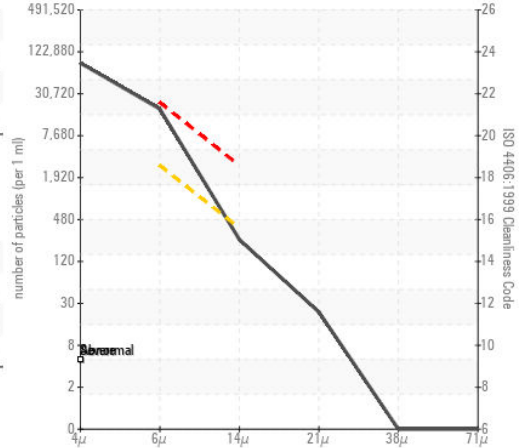
Non-ferrous Metals



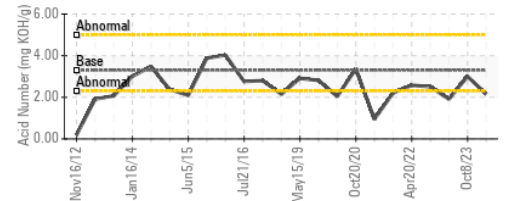
Viscosity @ 40°C



Particle Count



Acid Number



Certificate L2367

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

Sample No. : NX016946

Lab Number : 06182830

Unique Number : 11034156

Test Package : IND 2 (Additional Tests: KF, PQ, PrcCount)

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 : 17 May 2024

Tested : 22 May 2024

Diagnosed : 22 May 2024 - Don Baldrige

NORDEX USA - ROTH ROCK

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US 60606

Contact: ADAY MAGEC

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