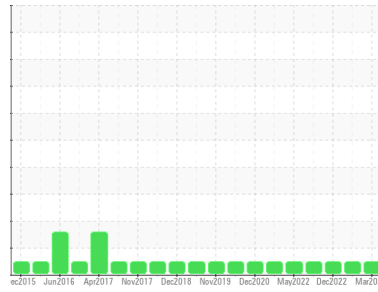




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area
FAIRWIND [200009524]
 Machine Id
12WEA84122 (S/N EWP-00659)
 Component
Wind Turbine Gearbox
 Fluid
CASTROL OPTIGEAR SYNTHETIC X 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 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		NX012303	NX004207	NX004190
Sample Date	Client Info		27 Mar 2024	16 Mar 2023	02 Dec 2022
Machine Age	hrs	Client Info	67344	57974	55474
Oil Age	hrs	Client Info	67344	57974	55474
Oil Changed	Client Info		Not Changed	Not Changd	Not Changed
Sample Status			NORMAL	NORMAL	NORMAL

WEAR METALS

	method	limit/base	current	history1	history2
PQ	ASTM D8184	>80	20	10	3
Iron	ppm	ASTM D5185m	>150	7	4
Chromium	ppm	ASTM D5185m	>5	<1	0
Nickel	ppm	ASTM D5185m	>10	0	0
Titanium	ppm	ASTM D5185m	>10	<1	0
Silver	ppm	ASTM D5185m		0	0
Aluminum	ppm	ASTM D5185m	>10	5	<1
Lead	ppm	ASTM D5185m	>20	0	0
Copper	ppm	ASTM D5185m	>50	1	<1
Tin	ppm	ASTM D5185m	>10	0	0
Vanadium	ppm	ASTM D5185m		0	<1
Cadmium	ppm	ASTM D5185m		0	0

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		0	0
Barium	ppm	ASTM D5185m		0	0
Molybdenum	ppm	ASTM D5185m	1150	631	643
Manganese	ppm	ASTM D5185m		0	<1
Magnesium	ppm	ASTM D5185m		5	10
Calcium	ppm	ASTM D5185m	2000	1274	1317
Phosphorus	ppm	ASTM D5185m	400	292	284
Zinc	ppm	ASTM D5185m	0	0	0
Sulfur	ppm	ASTM D5185m	1850	1664	1325

CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>50	8	8
Sodium	ppm	ASTM D5185m	>20	5	5
Potassium	ppm	ASTM D5185m	>20	2	0
Water	%	ASTM D6304	>0.05	0.018	0.011
ppm Water	ppm	ASTM D6304	>500	186	118.5

FLUID CLEANLINESS

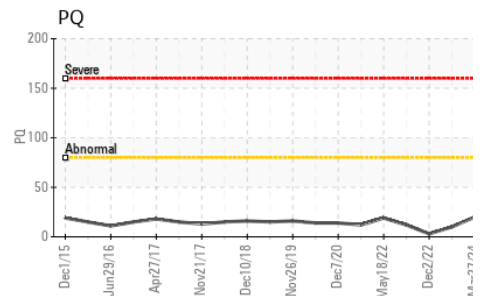
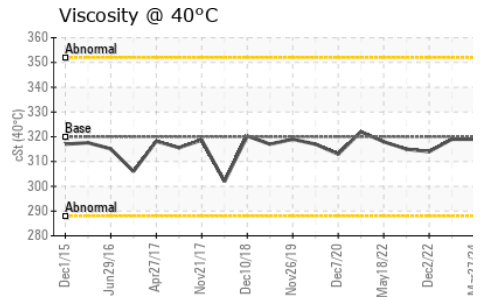
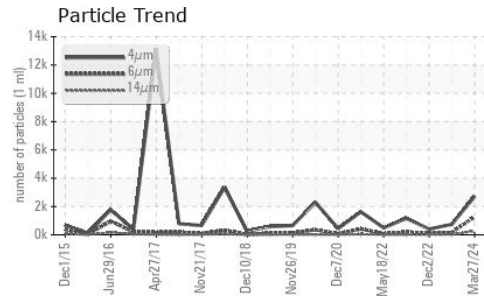
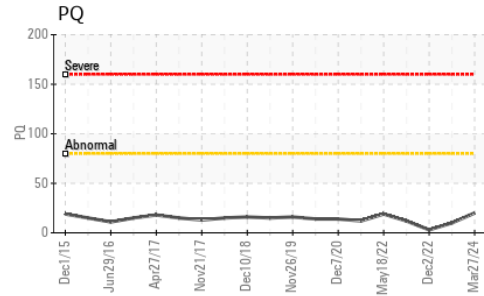
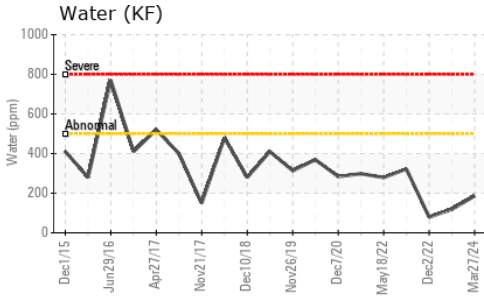
	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		2711	739	407
Particles >6µm	ASTM D7647	>2500	1263	165	90
Particles >14µm	ASTM D7647	>320	272	18	8
Particles >21µm	ASTM D7647	>80	97	8	2
Particles >38µm	ASTM D7647	>20	10	1	1
Particles >71µm	ASTM D7647	>4	0	0	0
Oil Cleanliness	ISO 4406 (c)	>--/18/15	19/17/15	17/15/11	16/14/10

FLUID DEGRADATION

	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	1.6	0.21	0.51



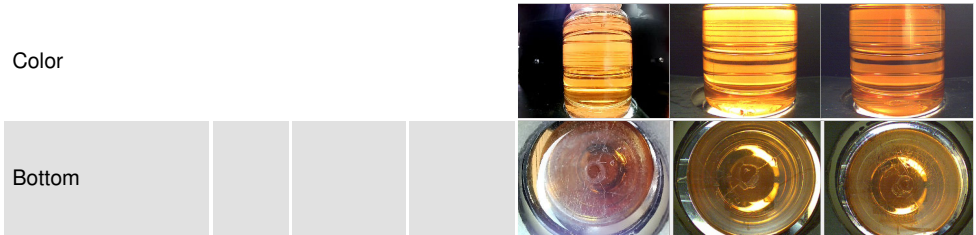
OIL ANALYSIS REPORT



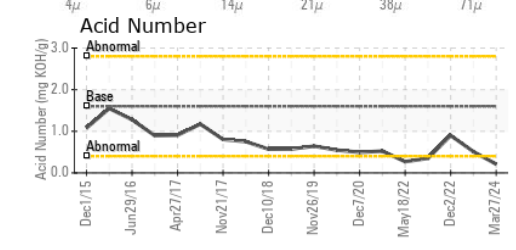
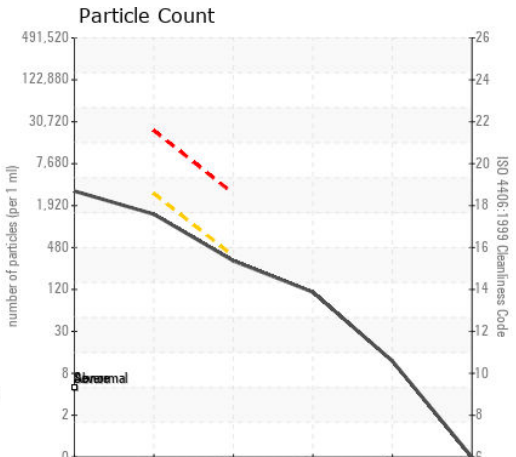
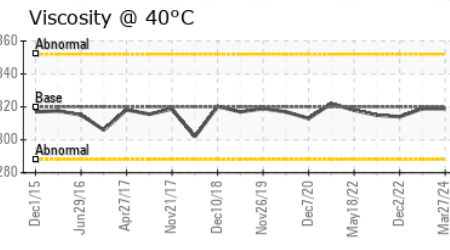
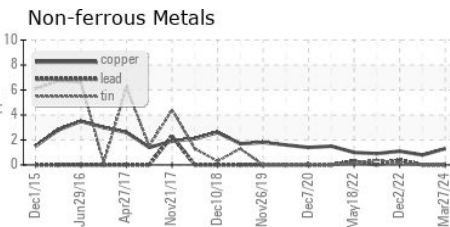
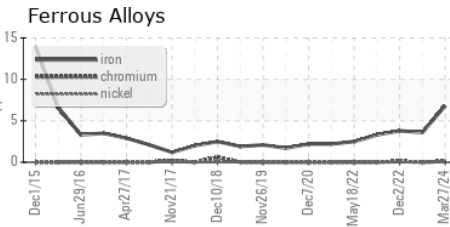
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	LIGHT
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.05	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	320	319	314

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. : NX012303
Lab Number : 06209221
Unique Number : 11076682
Test Package : IND 2 (Additional Tests: KF, PQ, PrtCount)

Received : 13 Jun 2024
Tested : 16 Jun 2024
Diagnosed : 16 Jun 2024 - Doug Bogart

NORDEX USA - Chicago
 300 SOUTH WACKER DRIVE, SUITE 1500
 CHICAGO, IL
 US 60606

Contact: DEVIN LINEHAN
 DLinehan@nordex-online.com

T: (312)386-4124
 F: (312)386-7102

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)