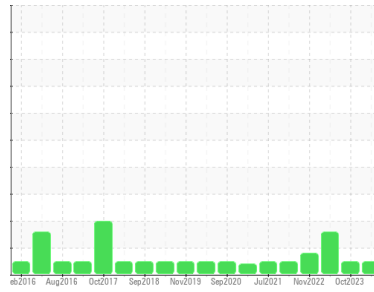




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area
THUNDER SPIRIT [200009532]
 Machine Id
25WEA84002 (S/N EWP00587)
 Component
Wind Turbine Gearbox
 Fluid
CASTROL OPTIGEAR SYNTHETIC X 320 (--- QTS)

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			NX015561	NX014795	NX013593
Sample Date	Client Info			20 Mar 2024	19 Oct 2023	07 Jun 2023
Machine Age	hrs	Client Info		58277	55243	52854
Oil Age	hrs	Client Info		0	0	0
Oil Changed	Client Info			N/A	N/A	N/A
Sample Status				NORMAL	NORMAL	ATTENTION

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184	>80	9	12	12
Iron	ppm	ASTM D5185m	>150	3	<1	3
Chromium	ppm	ASTM D5185m	>5	<1	0	0
Nickel	ppm	ASTM D5185m	>10	<1	<1	0
Titanium	ppm	ASTM D5185m	>10	<1	0	0
Silver	ppm	ASTM D5185m		0	<1	0
Aluminum	ppm	ASTM D5185m	>10	7	7	0
Lead	ppm	ASTM D5185m	>20	<1	<1	0
Copper	ppm	ASTM D5185m	>50	2	<1	2
Tin	ppm	ASTM D5185m	>10	<1	<1	0
Vanadium	ppm	ASTM D5185m		<1	<1	0
Cadmium	ppm	ASTM D5185m		<1	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		0	21	0
Barium	ppm	ASTM D5185m		<1	<1	5
Molybdenum	ppm	ASTM D5185m	1150	808	704	813
Manganese	ppm	ASTM D5185m		<1	0	0
Magnesium	ppm	ASTM D5185m		6	8	5
Calcium	ppm	ASTM D5185m	2000	1525	1408	1451
Phosphorus	ppm	ASTM D5185m	400	353	311	330
Zinc	ppm	ASTM D5185m	0	0	0	<1
Sulfur	ppm	ASTM D5185m	1850	1984	1828	1963

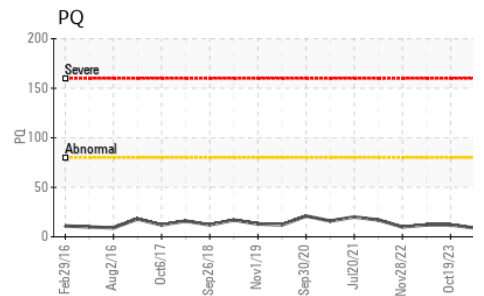
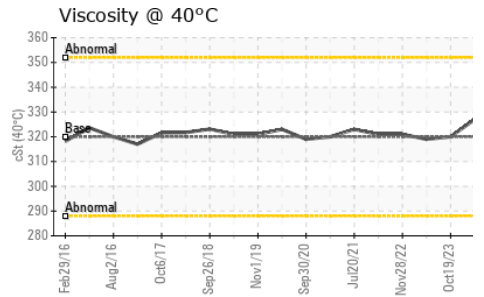
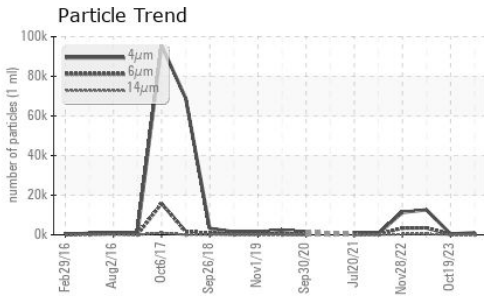
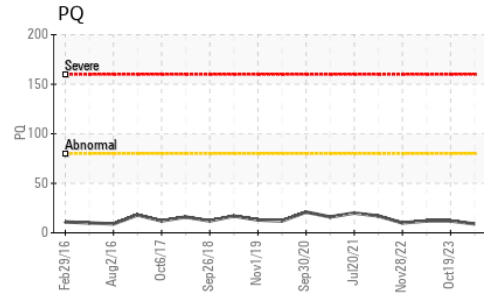
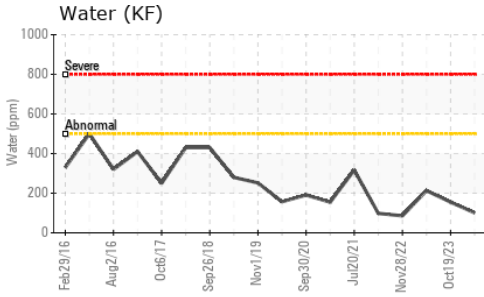
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>50	12	8	9
Sodium	ppm	ASTM D5185m	>20	4	3	<1
Potassium	ppm	ASTM D5185m	>20	2	2	2
Water	%	ASTM D6304	>0.05	0.010	0.015	0.021
ppm Water	ppm	ASTM D6304	>500	101	155	213.0

FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647		1085	419	12621
Particles >6µm		ASTM D7647	>2500	257	75	3497
Particles >14µm		ASTM D7647	>320	15	6	384
Particles >21µm		ASTM D7647	>80	4	1	133
Particles >38µm		ASTM D7647	>20	0	0	6
Particles >71µm		ASTM D7647	>4	0	0	0
Oil Cleanliness		ISO 4406 (c)	>--/18/15	17/15/11	16/13/10	21/19/16

FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	1.6	1.47	0.71	0.74



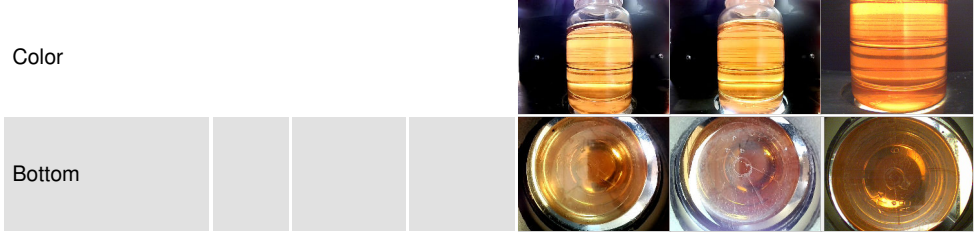
OIL ANALYSIS REPORT



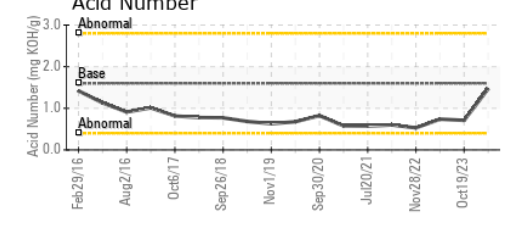
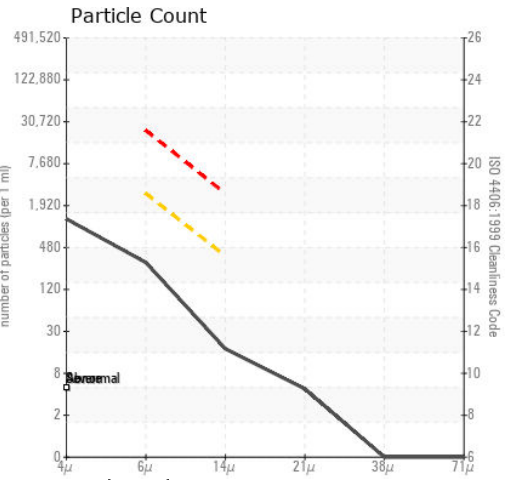
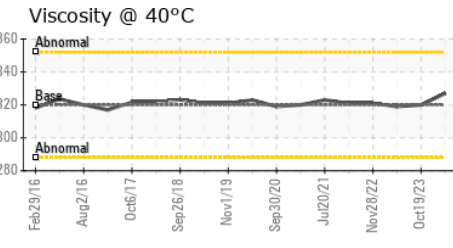
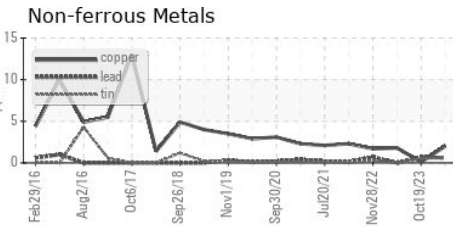
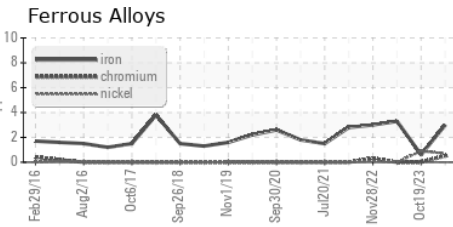
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual NONE	NONE	NONE	NONE
Silt	scalar	*Visual NONE	NONE	NONE	NONE
Debris	scalar	*Visual NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual NONE	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	327	320	319

SAMPLE IMAGES	method	limit/base	current	history1	history2
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GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : NX015561 **Received** : 01 Apr 2024
Lab Number : **06135618** **Tested** : 03 Apr 2024
Unique Number : 10955083 **Diagnosed** : 04 Apr 2024 - Don Baldrige
Test Package : IND 2 (Additional Tests: KF, PQ, PrcCount)

NORDEX USA - Chicago
 300 SOUTH WACKER DRIVE, SUITE 1500
 CHICAGO, IL 60606
 Contact: DEVIN LINEHAN
 DLinehan@nordex-online.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)