



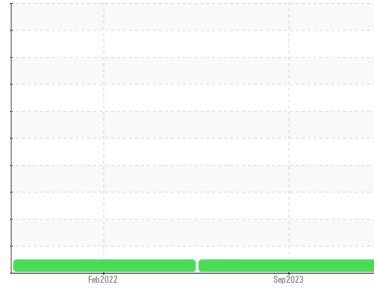
OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



Area
IRON STAR [200006142]
 Machine Id
21WEA88324
 Component
Wind Turbine Gearbox
 Fluid
GEAR OIL (PAO) 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

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		NX05961238	NX05491182	---
Sample Date	Client Info		25 Sep 2023	28 Feb 2022	---
Machine Age	hrs	Client Info	0	0	---
Oil Age	hrs	Client Info	0	0	---
Oil Changed	Client Info		N/A	N/A	---
Sample Status			NORMAL	NORMAL	---

WEAR METALS

	method	limit/base	current	history1	history2
PQ	ASTM D8184	>50	15	18	---
Iron	ppm	ASTM D5185m	>30	13	9
Chromium	ppm	ASTM D5185m	>3	0	0
Nickel	ppm	ASTM D5185m	>3	0	0
Titanium	ppm	ASTM D5185m	>10	0	0
Silver	ppm	ASTM D5185m		0	0
Aluminum	ppm	ASTM D5185m	>30	0	<1
Lead	ppm	ASTM D5185m	>15	<1	<1
Copper	ppm	ASTM D5185m	>10	<1	<1
Tin	ppm	ASTM D5185m	>10	0	<1
Vanadium	ppm	ASTM D5185m		<1	0
Cadmium	ppm	ASTM D5185m		0	0

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	25	10	13
Barium	ppm	ASTM D5185m	12	0	0
Molybdenum	ppm	ASTM D5185m	5	0	0
Manganese	ppm	ASTM D5185m		<1	<1
Magnesium	ppm	ASTM D5185m	25	0	0
Calcium	ppm	ASTM D5185m	25	18	21
Phosphorus	ppm	ASTM D5185m	375	208	248
Zinc	ppm	ASTM D5185m	25	0	0
Sulfur	ppm	ASTM D5185m	4900	5684	4372

CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>+15	7	7
Sodium	ppm	ASTM D5185m		2	2
Potassium	ppm	ASTM D5185m	>20	<1	0
Water	%	ASTM D6304	>0.02	0.002	0.00
ppm Water	ppm	ASTM D6304	>200	15.4	0.00

FLUID CLEANLINESS

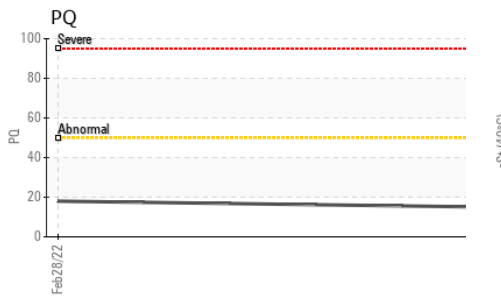
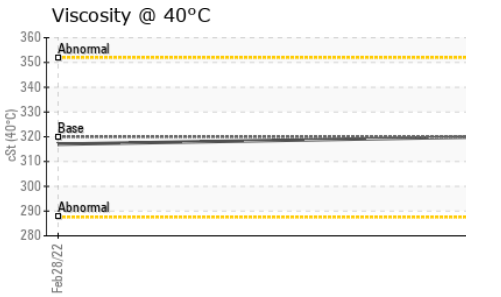
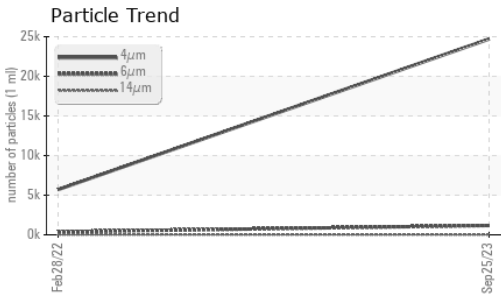
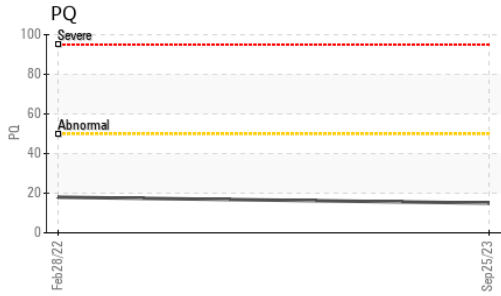
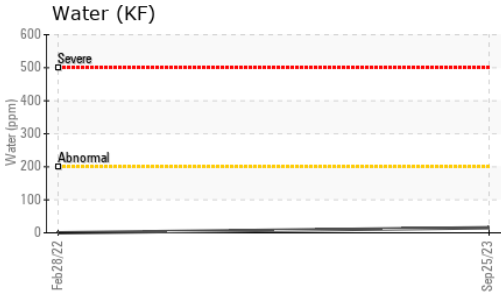
	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		24710	5709	---
Particles >6µm	ASTM D7647	>1300	1174	378	---
Particles >14µm	ASTM D7647	>160	37	42	---
Particles >21µm	ASTM D7647	>40	10	7	---
Particles >38µm	ASTM D7647	>10	2	0	---
Particles >71µm	ASTM D7647	>3	1	0	---
Oil Cleanliness	ISO 4406 (c)	>17/14	17/12	20/16/13	---

FLUID DEGRADATION

	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	1.10	0.36	0.40



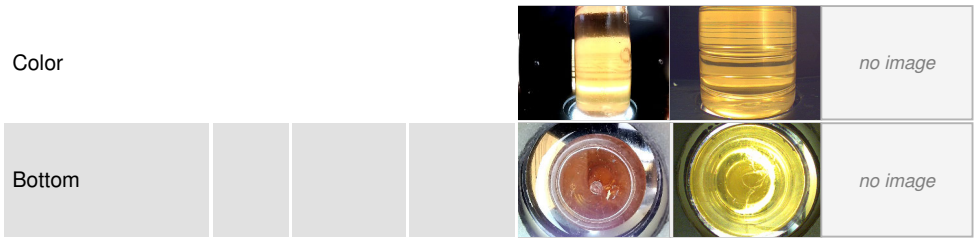
OIL ANALYSIS REPORT



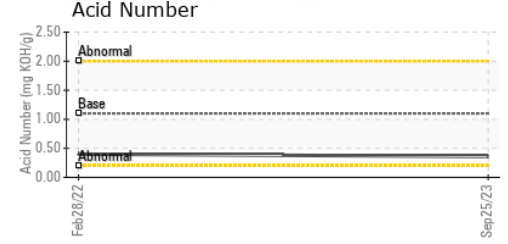
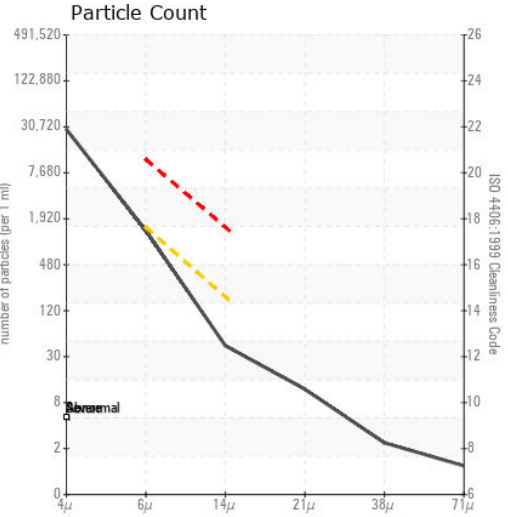
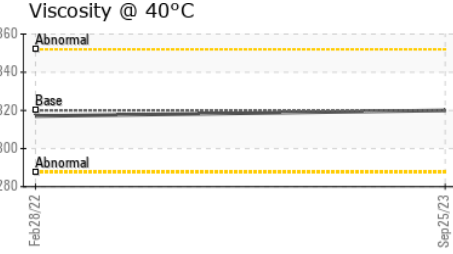
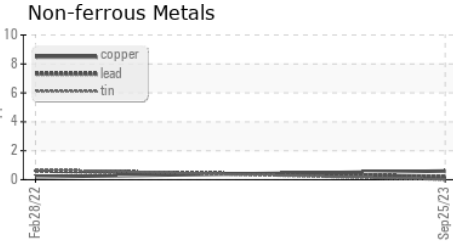
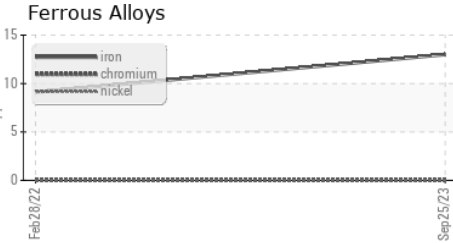
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	---
Yellow Metal	scalar	*Visual	NONE	NONE	---
Precipitate	scalar	*Visual	NONE	NONE	---
Silt	scalar	*Visual	NONE	NONE	---
Debris	scalar	*Visual	NONE	NONE	---
Sand/Dirt	scalar	*Visual	NONE	NONE	---
Appearance	scalar	*Visual	NORML	NORML	---
Odor	scalar	*Visual	NORML	NORML	---
Emulsified Water	scalar	*Visual	>0.02	NEG	---
Free Water	scalar	*Visual		NEG	---

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	320	317	---

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



GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : NX05961238 **Received** : 26 Sep 2023
Lab Number : 05961238 **Diagnosed** : 27 Sep 2023
Unique Number : 10662451 **Diagnostician** : Don Baldrige
Test Package : IND 2 (Additional Tests: KF, PQ, PrtCount)

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

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)