



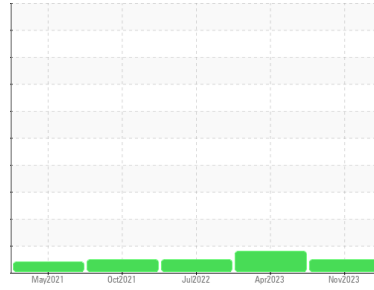
OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



Area
FRONTIER II [200006776]
 Machine Id
08WEA86922
 Component
Wind Turbine Gearbox
 Fluid
FUCHS RENOLIN CLP 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			NX06026393	NX05867854	NX05593160
Sample Date	Client Info			27 Nov 2023	10 Apr 2023	14 Jul 2022
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	ATTENTION	NORMAL

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184	>80	12	13	17
Iron	ppm	ASTM D5185m	>150	22	19	11
Chromium	ppm	ASTM D5185m	>5	0	<1	0
Nickel	ppm	ASTM D5185m	>10	<1	0	<1
Titanium	ppm	ASTM D5185m	>10	0	0	0
Silver	ppm	ASTM D5185m		0	0	<1
Aluminum	ppm	ASTM D5185m	>10	0	<1	<1
Lead	ppm	ASTM D5185m	>20	<1	0	<1
Copper	ppm	ASTM D5185m	>50	<1	1	<1
Tin	ppm	ASTM D5185m	>10	0	0	<1
Antimony	ppm	ASTM D5185m	>5	---	---	---
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0

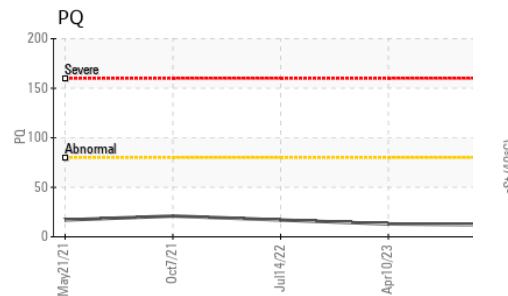
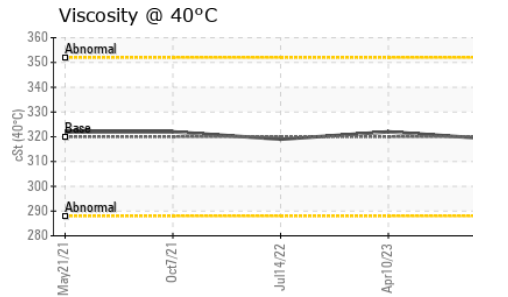
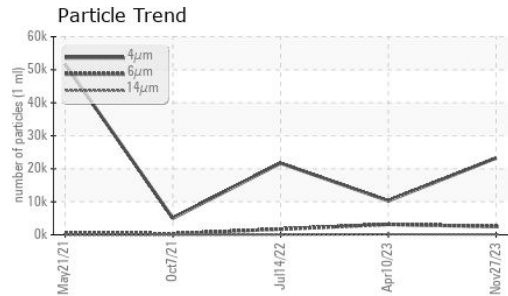
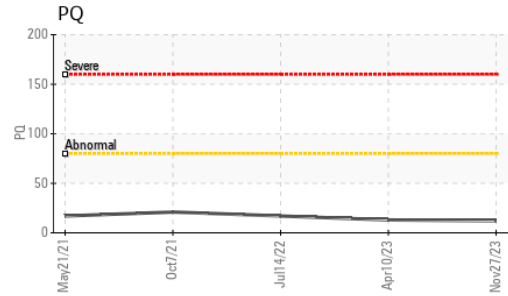
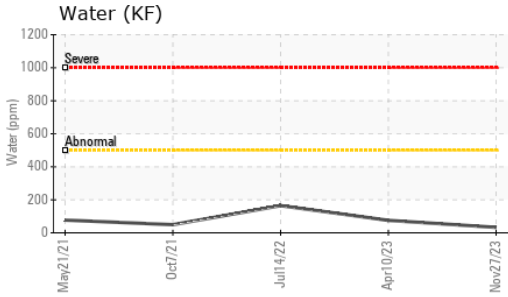
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		6	5	6
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		0	0	0
Manganese	ppm	ASTM D5185m		1	<1	<1
Magnesium	ppm	ASTM D5185m		0	<1	0
Calcium	ppm	ASTM D5185m		13	9	10
Phosphorus	ppm	ASTM D5185m		175	157	176
Zinc	ppm	ASTM D5185m		0	0	0
Sulfur	ppm	ASTM D5185m		5105	6189	4402

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>50	7	6	5
Sodium	ppm	ASTM D5185m	>20	5	4	2
Potassium	ppm	ASTM D5185m	>20	0	0	<1
Water	%	ASTM D6304	>0.05	0.003	0.007	0.016
ppm Water	ppm	ASTM D6304	>500	33	75.5	164.6

FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647		23261	10288	21693
Particles >6µm		ASTM D7647	>2500	2496	▲ 3167	1712
Particles >14µm		ASTM D7647	>320	121	171	65
Particles >21µm		ASTM D7647	>80	23	19	11
Particles >38µm		ASTM D7647	>20	1	1	0
Particles >71µm		ASTM D7647	>4	0	0	0
Oil Cleanliness		ISO 4406 (c)	>--/18/15	22/18/14	▲ 21/19/15	22/18/13



OIL ANALYSIS REPORT

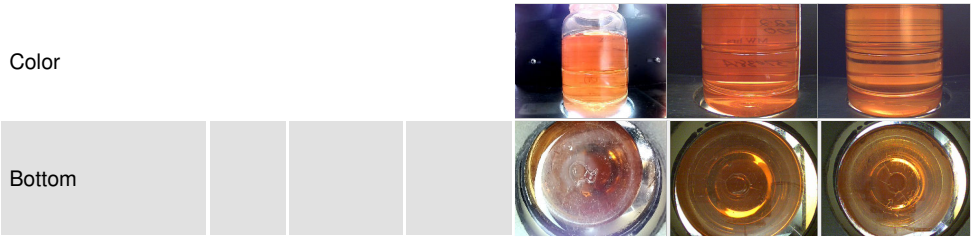


FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		0.46	0.53	0.54

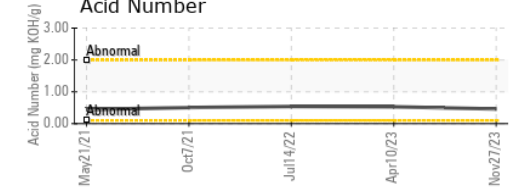
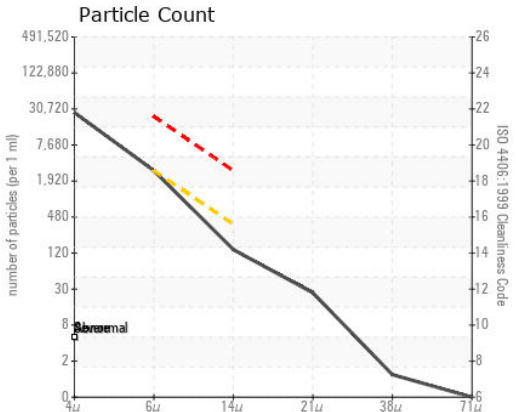
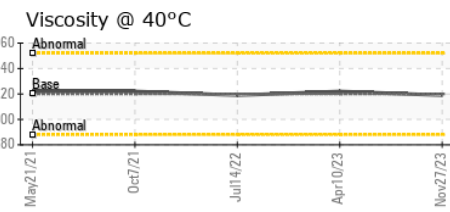
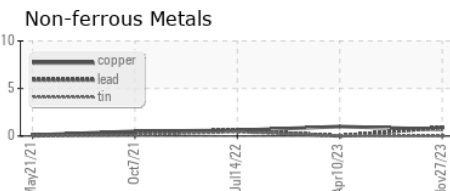
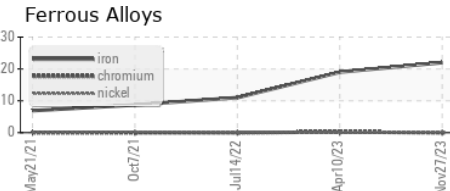
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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	319	322	319

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. : NX06026393 **Received** : 06 Dec 2023
Lab Number : 06026393 **Diagnosed** : 07 Dec 2023
Unique Number : 10776184 **Diagnostician** : Don Baldrige
Test Package : IND 2 (Additional Tests: KF, PQ, PrtCount)

NORDEX USA - Chicago
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 CHICAGO, IL
 US 60606
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 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)