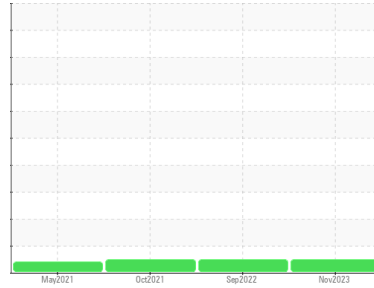




# OIL ANALYSIS REPORT

Sample Rating Trend

**NORMAL**



Area  
**FRONTIER II [200006776]**  
 Machine Id  
**19WEA86907**  
 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

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	<b>NX06026395</b>	NX05678589	NX05391898
Sample Date	Client Info	<b>28 Nov 2023</b>	27 Sep 2022	08 Oct 2021
Machine Age	hrs	Client Info	<b>0</b>	0
Oil Age	hrs	Client Info	<b>0</b>	0
Oil Changed	Client Info	<b>N/A</b>	N/A	N/A
Sample Status		<b>NORMAL</b>	NORMAL	NORMAL

## WEAR METALS

method	limit/base	current	history1	history2		
PQ	ASTM D8184	>80	<b>17</b>	9	17	
Iron	ppm	ASTM D5185m	>150	<b>23</b>	15	8
Chromium	ppm	ASTM D5185m	>5	<b>&lt;1</b>	0	0
Nickel	ppm	ASTM D5185m	>10	<b>0</b>	0	<1
Titanium	ppm	ASTM D5185m	>10	<b>0</b>	0	0
Silver	ppm	ASTM D5185m		<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m	>10	<b>0</b>	0	0
Lead	ppm	ASTM D5185m	>20	<b>0</b>	0	0
Copper	ppm	ASTM D5185m	>50	<b>0</b>	<1	<1
Tin	ppm	ASTM D5185m	>10	<b>0</b>	0	<1
Antimony	ppm	ASTM D5185m	>5	<b>---</b>	---	0
Vanadium	ppm	ASTM D5185m		<b>0</b>	0	0
Cadmium	ppm	ASTM D5185m		<b>0</b>	0	0

## ADDITIVES

method	limit/base	current	history1	history2		
Boron	ppm	ASTM D5185m		<b>4</b>	0	12
Barium	ppm	ASTM D5185m		<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185m		<b>0</b>	0	0
Manganese	ppm	ASTM D5185m		<b>1</b>	<1	<1
Magnesium	ppm	ASTM D5185m		<b>&lt;1</b>	0	<1
Calcium	ppm	ASTM D5185m		<b>10</b>	9	11
Phosphorus	ppm	ASTM D5185m		<b>178</b>	194	82
Zinc	ppm	ASTM D5185m		<b>0</b>	3	0
Sulfur	ppm	ASTM D5185m		<b>4893</b>	5966	4452

## CONTAMINANTS

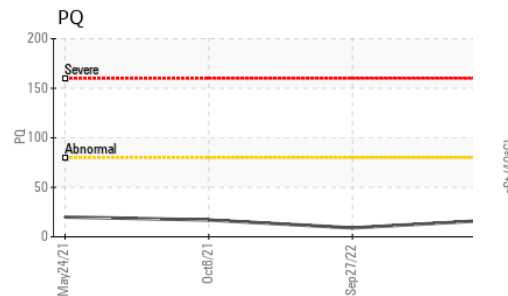
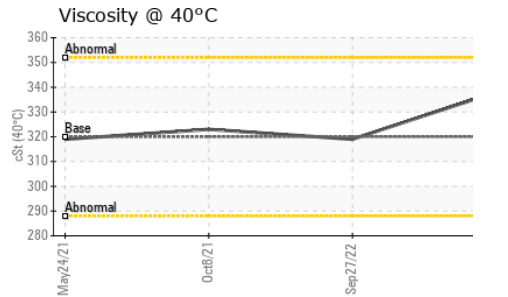
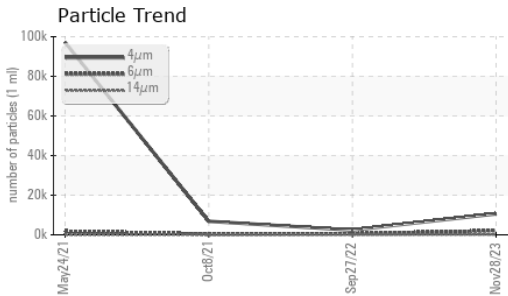
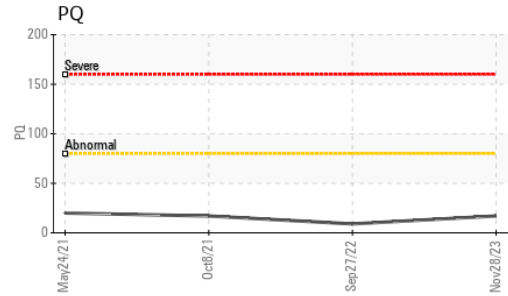
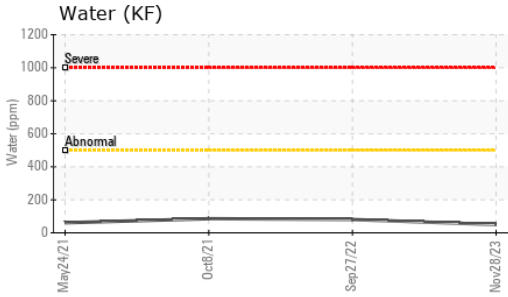
method	limit/base	current	history1	history2		
Silicon	ppm	ASTM D5185m	>50	<b>4</b>	3	3
Sodium	ppm	ASTM D5185m	>20	<b>4</b>	<1	1
Potassium	ppm	ASTM D5185m	>20	<b>&lt;1</b>	0	<1
Water	%	ASTM D6304	>0.05	<b>0.005</b>	0.008	0.008
ppm Water	ppm	ASTM D6304	>500	<b>50</b>	80.7	85.6

## FLUID CLEANLINESS

method	limit/base	current	history1	history2		
Particles >4µm	ASTM D7647			<b>10596</b>	2377	6820
Particles >6µm	ASTM D7647	>2500		<b>2038</b>	518	332
Particles >14µm	ASTM D7647	>320		<b>125</b>	30	13
Particles >21µm	ASTM D7647	>80		<b>28</b>	10	2
Particles >38µm	ASTM D7647	>20		<b>1</b>	1	0
Particles >71µm	ASTM D7647	>4		<b>0</b>	0	0
Oil Cleanliness	ISO 4406 (c)	>--/18/15		<b>21/18/14</b>	18/16/12	20/16/11



# OIL ANALYSIS REPORT

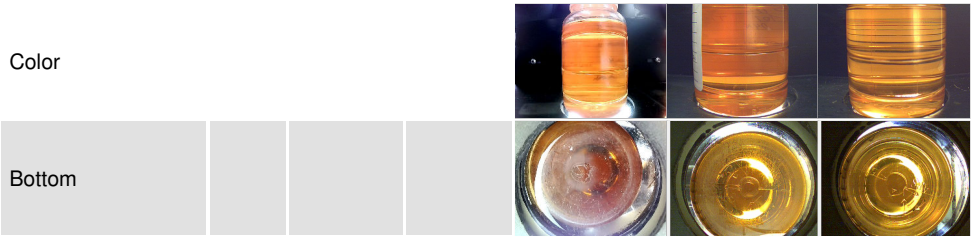


FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		<b>0.50</b>	0.56	0.523

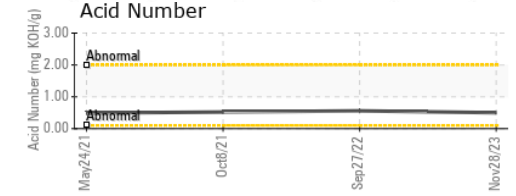
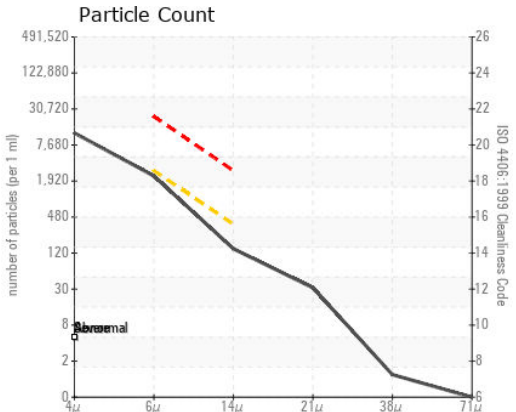
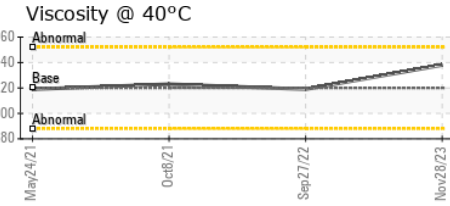
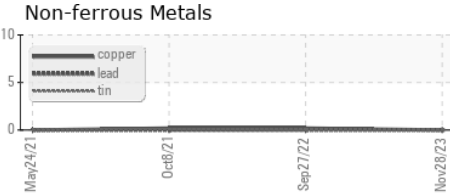
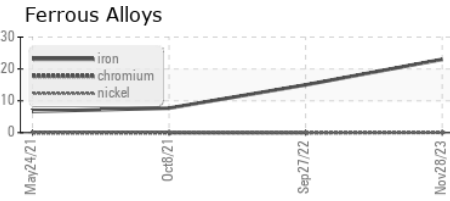
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Precipitate	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Silt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Debris	scalar	*Visual	NONE	<b>NONE</b>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

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	320	<b>338.0</b>	319	323

### SAMPLE IMAGES



### GRAPHS



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : NX06026395 **Received** : 06 Dec 2023  
**Lab Number** : 06026395 **Diagnosed** : 12 Dec 2023  
**Unique Number** : 10776186 **Diagnostician** : Jonathan Hester  
**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)