



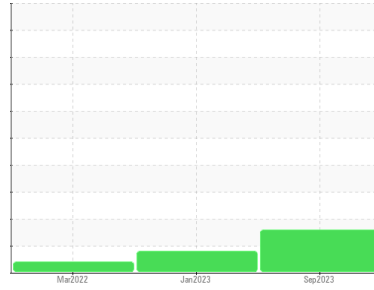
# PROBLEM SUMMARY

## Sample Rating Trend

ISO

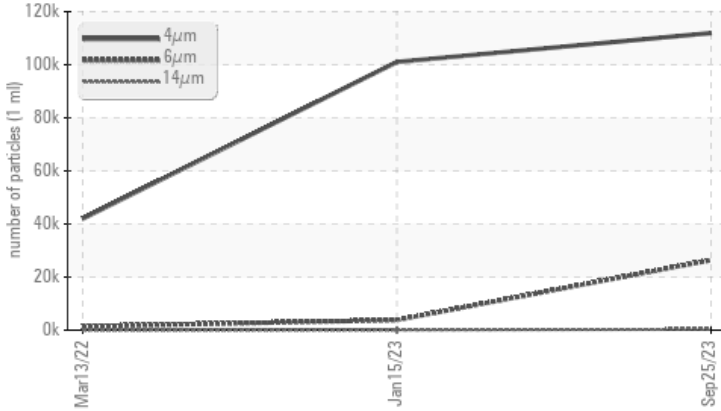


Area  
**IRON STAR [200006142]**  
 Machine Id  
**19WEA88290**  
 Component  
**Wind Turbine Gearbox**  
 Fluid  
**GEAR OIL (PAO) ISO 320 (--- LTR)**



## COMPONENT CONDITION SUMMARY

### ▲ Particle Trend



## RECOMMENDATION

We recommend you service the filters on this component if applicable. Resample at the next service interval to monitor.

## PROBLEMATIC TEST RESULTS

Sample Status			ABNORMAL	ABNORMAL	ABNORMAL
Particles >6µm	ASTM D7647	>1300	▲ <b>26371</b>	▲ 3779	▲ 1444
Particles >14µm	ASTM D7647	>160	▲ <b>320</b>	80	33
Particles >21µm	ASTM D7647	>40	▲ <b>74</b>	27	8
Oil Cleanliness	ISO 4406 (c)	>17/14	▲ <b>22/15</b>	▲ 19/13	▲ 23/18/12

Customer Id: NORDEX  
 Sample No.: NX05961233  
 Lab Number: 05961233  
 Test Package: IND 2



To manage this report scan the QR code

To discuss the diagnosis or test data:  
 Don Baldrige +1  
[don.b505@comcast.net](mailto:don.b505@comcast.net)

To change component or sample information:  
 Customer Service +1 1-800-237-1369  
[customerservice@wearcheck.com](mailto:customerservice@wearcheck.com)

## RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Change Filter	---	---	?	We recommend you service the filters on this component if applicable.

## HISTORICAL DIAGNOSIS

**15 Jan 2023 Diag: Jonathan Hester**

ISO



No corrective action is recommended at this time. Resample at the next service interval to monitor. All component wear rates are normal. There is a high amount of silt (particulates < 14 microns in size) present in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report



**13 Mar 2022 Diag: Don Baldrige**

ISO



No corrective action is recommended at this time. Resample at the next service interval to monitor. All component wear rates are normal. There is a high amount of silt (particulates < 14 microns in size) present in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

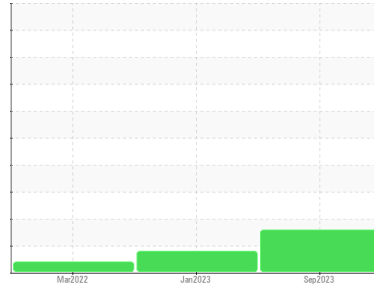
view report





# OIL ANALYSIS REPORT

Sample Rating Trend



ISO



Area  
**IRON STAR [200006142]**  
 Machine Id  
**19WEA88290**  
 Component  
**Wind Turbine Gearbox**  
 Fluid  
**GEAR OIL (PAO) ISO 320 (--- LTR)**

## DIAGNOSIS

### Recommendation

We recommend you service the filters on this component if applicable. Resample at the next service interval to monitor.

### Wear

All component wear rates are normal.

### Contamination

There is a high amount of particulates present 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		<b>NX05961233</b>	NX05739628	NX05491185
Sample Date	Client Info		<b>25 Sep 2023</b>	15 Jan 2023	13 Mar 2022
Machine Age	hrs	Client Info	<b>0</b>	0	0
Oil Age	hrs	Client Info	<b>0</b>	0	0
Oil Changed	Client Info		<b>N/A</b>	N/A	N/A
Sample Status			<b>ABNORMAL</b>	ABNORMAL	ABNORMAL

## WEAR METALS

	method	limit/base	current	history1	history2	
PQ	ASTM D8184	>50	<b>12</b>	10	15	
Iron	ppm	ASTM D5185m	>30	<b>15</b>	22	11
Chromium	ppm	ASTM D5185m	>3	<b>0</b>	0	0
Nickel	ppm	ASTM D5185m	>3	<b>0</b>	0	0
Titanium	ppm	ASTM D5185m	>10	<b>0</b>	0	0
Silver	ppm	ASTM D5185m		<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m	>30	<b>0</b>	0	<1
Lead	ppm	ASTM D5185m	>15	<b>0</b>	<1	<1
Copper	ppm	ASTM D5185m	>10	<b>&lt;1</b>	0	<1
Tin	ppm	ASTM D5185m	>10	<b>0</b>	<1	<1
Vanadium	ppm	ASTM D5185m		<b>&lt;1</b>	0	0
Cadmium	ppm	ASTM D5185m		<b>0</b>	0	0

## ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m	25	<b>6</b>	8	11
Barium	ppm	ASTM D5185m	12	<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185m	5	<b>0</b>	0	0
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	<1	<1
Magnesium	ppm	ASTM D5185m	25	<b>0</b>	0	0
Calcium	ppm	ASTM D5185m	25	<b>16</b>	21	21
Phosphorus	ppm	ASTM D5185m	375	<b>202</b>	221	249
Zinc	ppm	ASTM D5185m	25	<b>0</b>	4	0
Sulfur	ppm	ASTM D5185m	4900	<b>5629</b>	5681	4421

## CONTAMINANTS

	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>+15	<b>12</b>	13	13
Sodium	ppm	ASTM D5185m		<b>2</b>	3	2
Potassium	ppm	ASTM D5185m	>20	<b>1</b>	0	0
Water	%	ASTM D6304	>0.02	<b>0.002</b>	0.006	0.001
ppm Water	ppm	ASTM D6304	>200	<b>17.6</b>	61.2	2.1

## FLUID CLEANLINESS

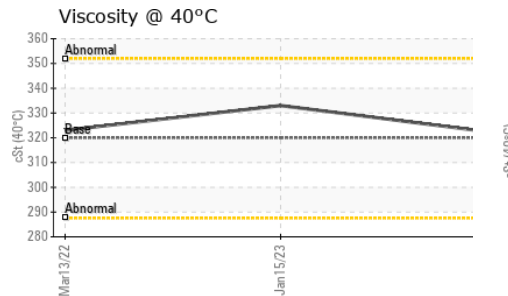
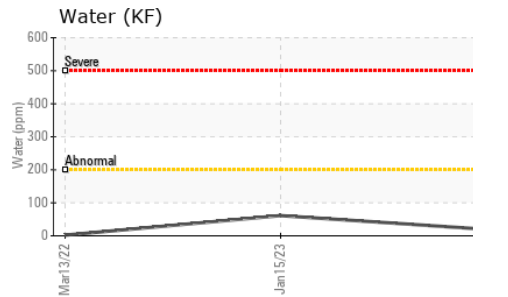
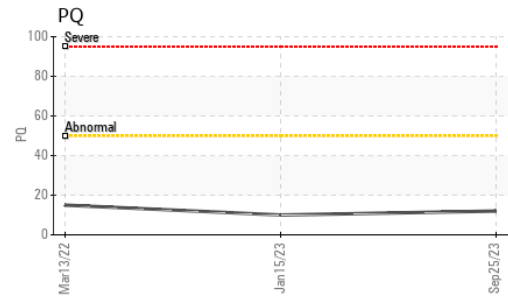
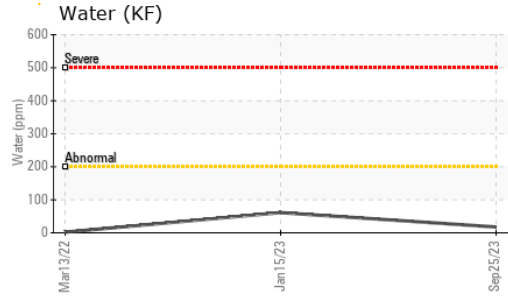
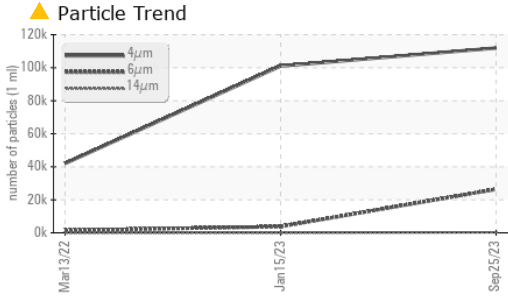
	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		<b>111932</b>	101031	41987
Particles >6µm	ASTM D7647	>1300	<b>▲ 26371</b>	▲ 3779	▲ 1444
Particles >14µm	ASTM D7647	>160	<b>▲ 320</b>	80	33
Particles >21µm	ASTM D7647	>40	<b>▲ 74</b>	27	8
Particles >38µm	ASTM D7647	>10	<b>3</b>	1	1
Particles >71µm	ASTM D7647	>3	<b>1</b>	0	0
Oil Cleanliness	ISO 4406 (c)	>17/14	<b>▲ 22/15</b>	▲ 19/13	▲ 23/18/12

## FLUID DEGRADATION

	method	limit/base	current	history1	history2	
Acid Number (AN)	mg KOH/g	ASTM D8045	1.10	<b>0.34</b>	0.33	0.39



# OIL ANALYSIS REPORT

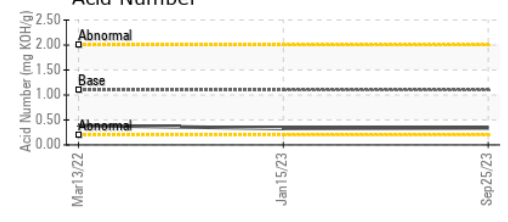
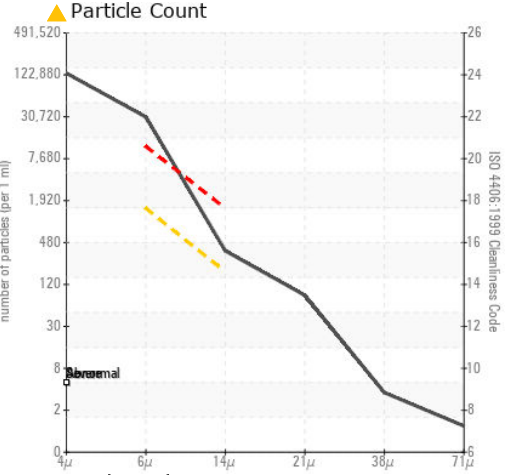
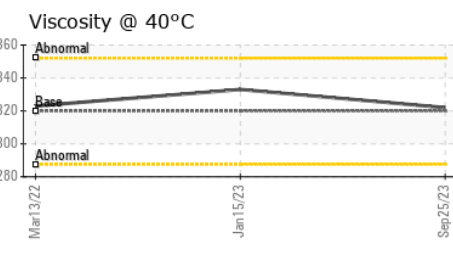
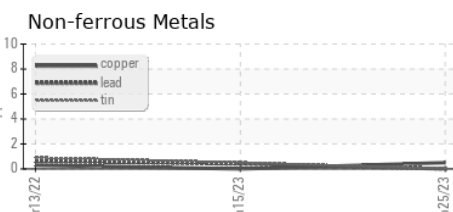
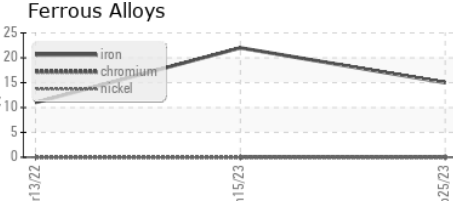


VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance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

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445 320	322	333	323

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					

## GRAPHS



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : NX05961233 **Received** : 26 Sep 2023  
**Lab Number** : 05961233 **Diagnosed** : 27 Sep 2023  
**Unique Number** : 10662446 **Diagnostician** : Don Baldrige  
**Test Package** : IND 2 ( Additional Tests: KF, PQ, PrtCount )

**NORDEX USA - Chicago**  
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 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)