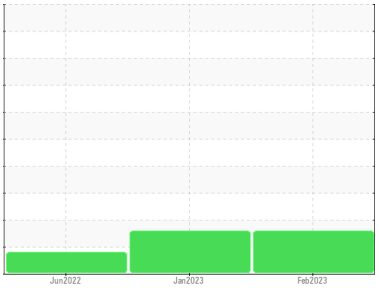
PROBLEM SUMMARY

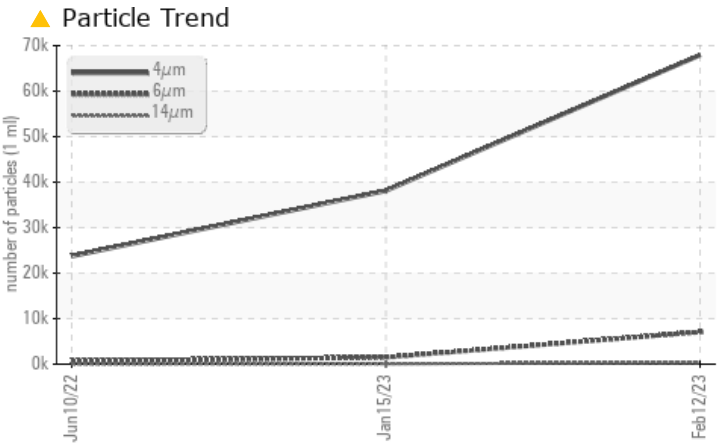
Area
IRON STAR [200006142]
Machine Id
15WEA88308
Component
Wind Turbine Gearbox
Fluid
GEAR OIL (PAO) ISO 320 (--- LTR)

Sample Rating Trend



ISO

COMPONENT CONDITION SUMMARY



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	>320	▲ **7052**	▲ 1484	▲ 698
Particles >14µm	ASTM D7647	>40	▲ **323**	▲ 77	18
Particles >21µm	ASTM D7647	>10	▲ **69**	▲ 23	5
Oil Cleanliness	ISO 4406 (c)	>--/15/12	▲ **23/20/16**	▲ 22/18/13	▲ 22/17/11

Customer Id: NORDEX
Sample No.: NX05961229
Lab Number: 05961229
Test Package: IND 2

To manage this report scan the QR code

To discuss the diagnosis or test data:
Don Baldridge +1
don.b505@comcast.net

To change component or sample information:
Customer Service +1 1-800-237-1369
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

We recommend you service the filters on this component if applicable. Resample at the next service interval to monitor.All component wear rates are normal. There is a high amount of particulates present in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report

10 Jun 2022 Diag: Doug Bogart

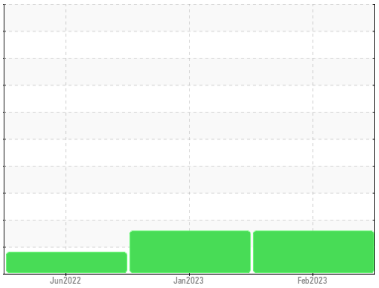
ISO

Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.All component wear rates are normal. There is a high amount of silt (particulates < 14 microns in size) present in the oil. Confirm oil type. The AN level is acceptable for this fluid. The condition of the oil is acceptable for the time in service.

view report

OIL ANALYSIS REPORT

Sample Rating Trend



ISO

Area
IRON STAR [200006142]
Machine Id
15WEA88308
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		**NX05961229**	WC05739624	NX05596453
Sample Date		Client Info		**12 Feb 2023**	15 Jan 2023	10 Jun 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				**ABNORMAL**	ABNORMAL	ABNORMAL

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184	>50	**16**	8	15
Iron	ppm	ASTM D5185m	>30	**18**	18	9
Chromium	ppm	ASTM D5185m	>3	**0**	0	0
Nickel	ppm	ASTM D5185m	>3	**0**	0	0
Titanium	ppm	ASTM D5185m	>10	**0**	0	0
Silver	ppm	ASTM D5185m		**0**	0	<1
Aluminum	ppm	ASTM D5185m	>30	**0**	0	<1
Lead	ppm	ASTM D5185m	>15	**<1**	<1	<1
Copper	ppm	ASTM D5185m	>10	**<1**	0	<1
Tin	ppm	ASTM D5185m	>10	**<1**	<1	<1
Vanadium	ppm	ASTM D5185m		**<1**	0	0
Cadmium	ppm	ASTM D5185m		**0**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	25	**8**	9	9
Barium	ppm	ASTM D5185m	12	**0**	0	0
Molybdenum	ppm	ASTM D5185m	5	**0**	0	0
Manganese	ppm	ASTM D5185m		**<1**	<1	<1
Magnesium	ppm	ASTM D5185m	25	**0**	0	<1
Calcium	ppm	ASTM D5185m	25	**18**	21	17
Phosphorus	ppm	ASTM D5185m	375	**211**	217	176
Zinc	ppm	ASTM D5185m	25	**0**	3	3
Sulfur	ppm	ASTM D5185m	4900	**5687**	5677	4568

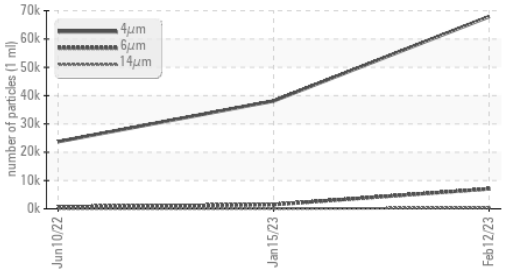
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>+15	**6**	7	4
Sodium	ppm	ASTM D5185m		**3**	4	2
Potassium	ppm	ASTM D5185m	>20	**1**	0	1
Water	%	ASTM D6304	>0.02	**0.002**	0.005	0.010
ppm Water	ppm	ASTM D6304	>200	**15.3**	58.8	104.3

FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647		**67924**	38115	23722
Particles >6µm		ASTM D7647	>320	▲ **7052**	▲ 1484	▲ 698
Particles >14µm		ASTM D7647	>40	▲ **323**	▲ 77	18
Particles >21µm		ASTM D7647	>10	▲ **69**	▲ 23	5
Particles >38µm		ASTM D7647	>3	**2**	1	1
Particles >71µm		ASTM D7647	>3	**1**	0	0
Oil Cleanliness		ISO 4406 (c)	>--/15/12	▲ **23/20/16**	▲ 22/18/13	▲ 22/17/11

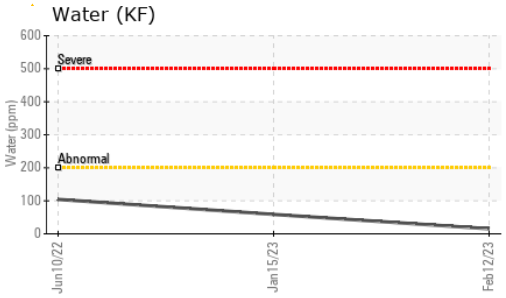
FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	1.10	**0.37**	0.36	0.31

OIL ANALYSIS REPORT

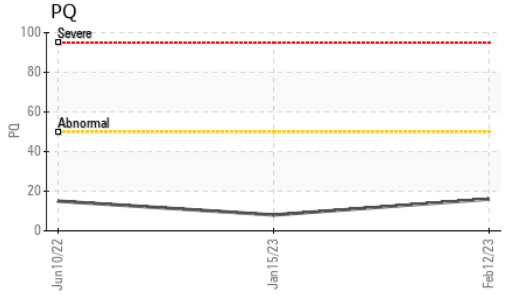
Particle Trend



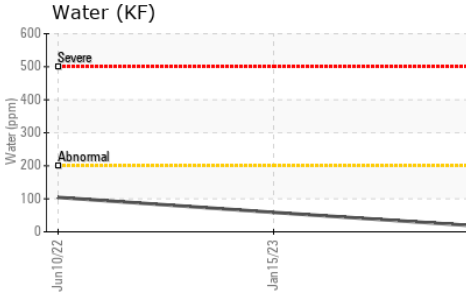
Water (KF)



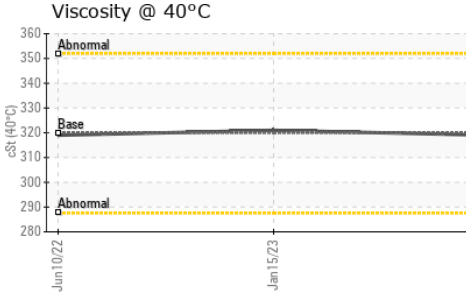
PQ



Water (KF)

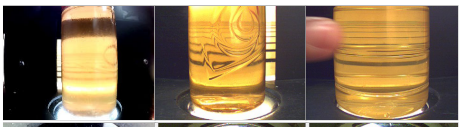


Viscosity @ 40°C



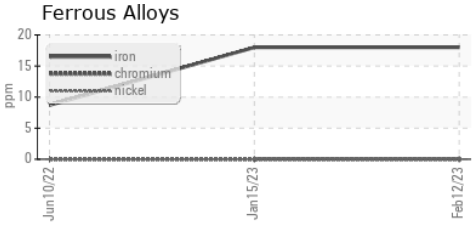
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**LIGHT**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Appearance	scalar	*Visual	NORML	**NORML**	NORML	NORML
Odor	scalar	*Visual	NORML	**NORML**	NORML	NORML
Emulsified Water	scalar	*Visual	>0.02	**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**	321	319

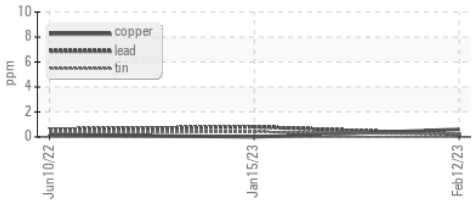
SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					

GRAPHS

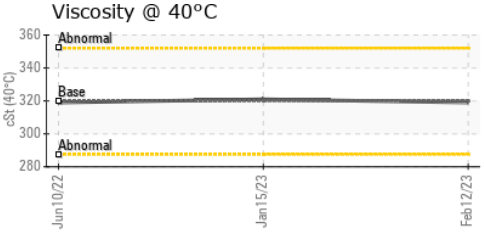
Ferrous Alloys



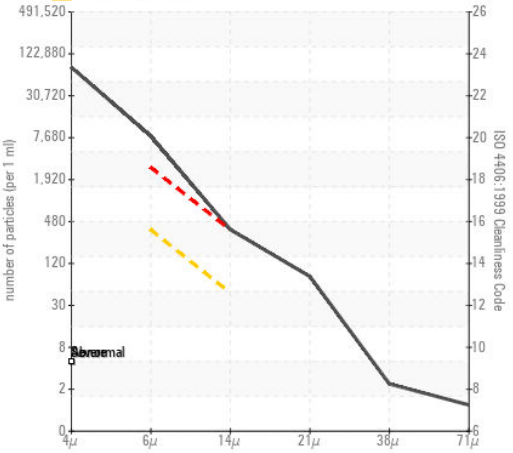
Non-ferrous Metals



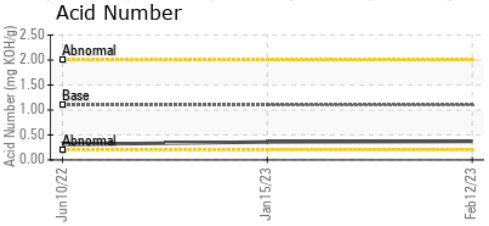
Viscosity @ 40°C



Particle Count



Acid Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : NX05961229 **Received** : 26 Sep 2023
Lab Number : 05961229 **Diagnosed** : 27 Sep 2023
Unique Number : 10662442 **Diagnostician** : Don Baldridge
Test Package : IND 2 (Additional Tests: KF, PQ, PrtCount)

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)

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