



PROBLEM SUMMARY

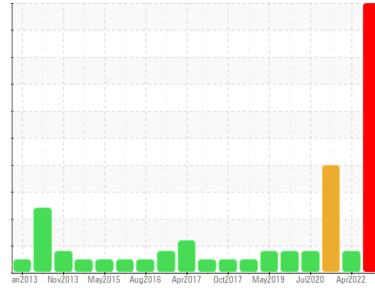
Sample Rating Trend

WEAR

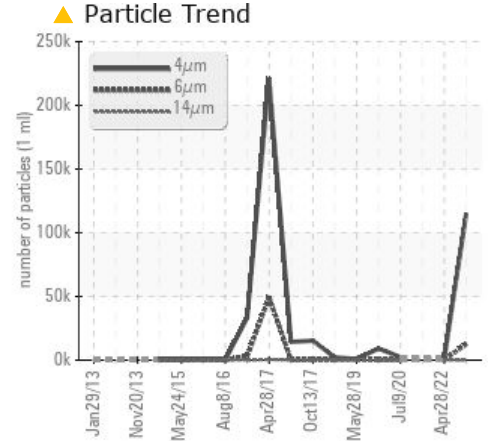
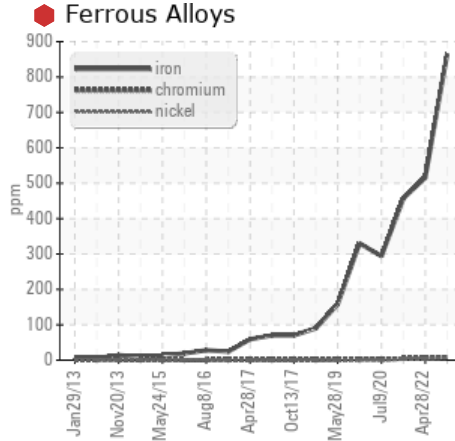
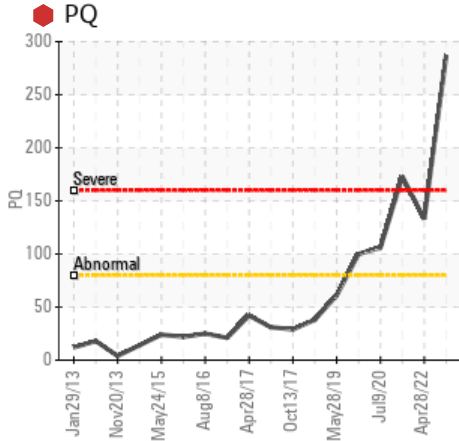


Area
BEEBE [200005316]
 Machine Id
06WEA82340

Component
Wind Turbine Gearbox
 Fluid
CASTROL OPTIGEAR SYNTHETIC X 320 (4 LTR)



COMPONENT CONDITION SUMMARY



RECOMMENDATION

We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.

PROBLEMATIC TEST RESULTS

Sample Status			SEVERE	ABNORMAL	ABNORMAL
PQ		ASTM D8184 >80	287	133	173
Iron	ppm	ASTM D5185m >150	865	516	457
Chromium	ppm	ASTM D5185m >5	8	5	4
Particles >6µm		ASTM D7647 >2500	12581	338	---
Oil Cleanliness		ISO 4406 (c) >--/18/15	24/21/13	17/16/13	---

Customer Id: NORBEE
 Sample No.: NX05798677
 Lab Number: 05798677
 Test Package: IND 2



To manage this report scan the QR code

To discuss the diagnosis or test data:
 Jonathan Hester +1 919-379-4092 x4092
jhester@wearcheckusa.com

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

RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Inspect Wear Source	---	---	?	We advise that you inspect for the source(s) of wear.
Resample	---	---	?	We recommend an early resample to monitor this condition.

HISTORICAL DIAGNOSIS

28 Apr 2022 Diag: Jonathan Hester

WEAR



No corrective action is recommended at this time. Resample at the next service interval to monitor. Gear wear is indicated. There is no indication of any contamination in the oil. The amount and size of particulates present in the system are acceptable. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

[view report](#)



10 Oct 2021 Diag: Jonathan Hester

WEAR



We recommend you service the filters on this component. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition. We were unable to perform a particle count due to metal particles present in this sample. Moderate concentration of visible metal present. Gear wear is indicated. The high ferrous density (PQ) index indicates that abnormal wear is occurring. There is no indication of any contamination in the oil. The AN level is acceptable for this fluid.

[view report](#)



09 Jul 2020 Diag: Jonathan Hester

WEAR



No corrective action is recommended at this time. We recommend an early resample to monitor this condition. Gear wear is indicated. The amount and size of particulates present in the system are acceptable. There is no indication of any contamination in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

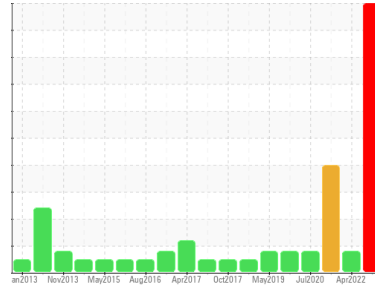
[view report](#)





OIL ANALYSIS REPORT

Sample Rating Trend



Area
BEEBE [200005316]
 Machine Id
06WEA82340

Component
Wind Turbine Gearbox
 Fluid
CASTROL OPTIGEAR SYNTHETIC X 320 (4 LTR)

DIAGNOSIS

Recommendation
 We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.

Wear
 Gear wear is indicated. The very high ferrous density (PQ) index indicates that severe wear is occurring.

Contamination
 There is a high amount of silt (particulates < 14 microns in size) present in the oil.

Fluid Condition
 The AN level is acceptable for this fluid.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		NX05798677	NX05536332	NX004278
Sample Date	Client Info		21 Mar 2023	28 Apr 2022	10 Oct 2021
Machine Age	hrs	Client Info	73259	68100	0
Oil Age	hrs	Client Info	0	0	0
Oil Changed	Client Info		N/A	N/A	N/A
Sample Status			SEVERE	ABNORMAL	ABNORMAL

WEAR METALS

	method	limit/base	current	history1	history2
PQ	ASTM D8184	>80	287	133	173
Iron	ppm	ASTM D5185m	>150	865	516
Chromium	ppm	ASTM D5185m	>5	8	5
Nickel	ppm	ASTM D5185m	>10	5	3
Titanium	ppm	ASTM D5185m	>10	0	0
Silver	ppm	ASTM D5185m		0	<1
Aluminum	ppm	ASTM D5185m	>10	2	1
Lead	ppm	ASTM D5185m	>20	0	<1
Copper	ppm	ASTM D5185m	>50	4	2
Tin	ppm	ASTM D5185m	>10	0	0
Antimony	ppm	ASTM D5185m	>5	---	0
Vanadium	ppm	ASTM D5185m		0	<1
Cadmium	ppm	ASTM D5185m		0	<1

ADDITIVES

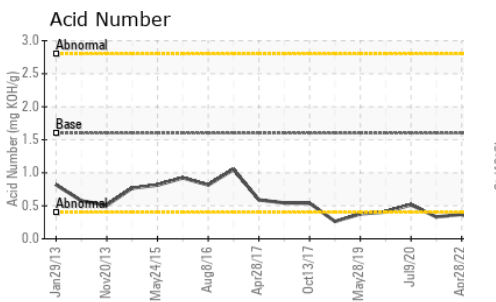
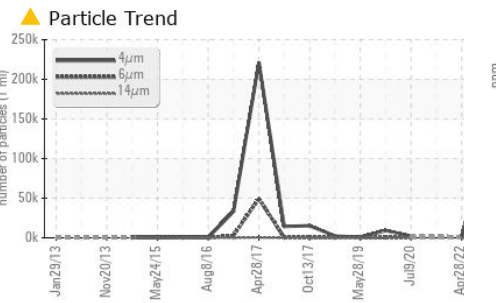
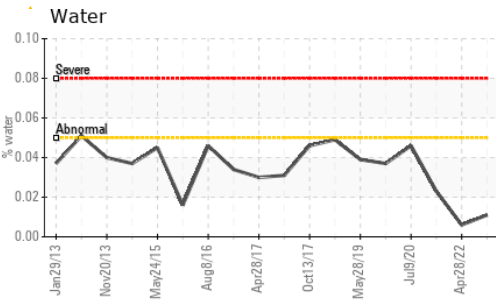
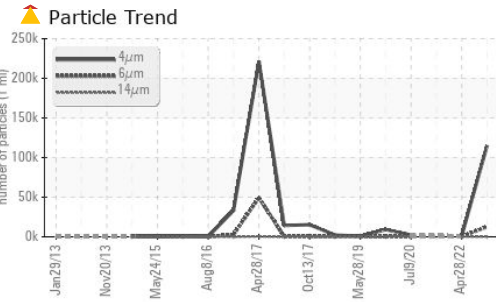
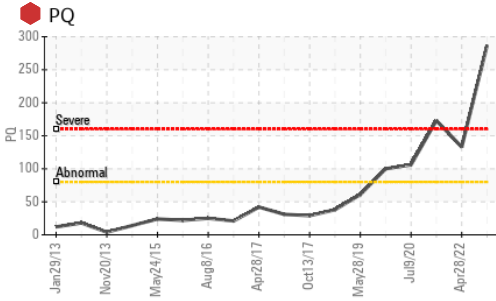
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Boron	ppm	ASTM D5185m		0	22
Barium	ppm	ASTM D5185m		2	0
Molybdenum	ppm	ASTM D5185m	1150	819	788
Manganese	ppm	ASTM D5185m		7	4
Magnesium	ppm	ASTM D5185m		12	15
Calcium	ppm	ASTM D5185m	2000	1662	1715
Phosphorus	ppm	ASTM D5185m	400	324	362
Zinc	ppm	ASTM D5185m	0	9	2
Sulfur	ppm	ASTM D5185m	1850	1698	1531

CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>50	14	10
Sodium	ppm	ASTM D5185m	>20	0	6
Potassium	ppm	ASTM D5185m	>20	<1	0
Water	%	ASTM D6304	>0.05	0.011	0.006
ppm Water	ppm	ASTM D6304	>500	115.9	67.6

FLUID CLEANLINESS

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647			115027	1211
Particles >6µm	ASTM D7647	>2500	12581	338	---
Particles >14µm	ASTM D7647	>320	52	55	---
Particles >21µm	ASTM D7647	>80	5	15	---
Particles >38µm	ASTM D7647	>20	0	0	---
Particles >71µm	ASTM D7647	>4	0	0	---
Oil Cleanliness	ISO 4406 (c)	>--/18/15	24/21/13	17/16/13	---



FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	1.6	0.17	0.37	0.331

VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	VLITE	▲ MODER
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	VLITE	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	303	306	301

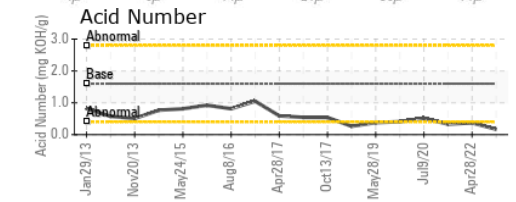
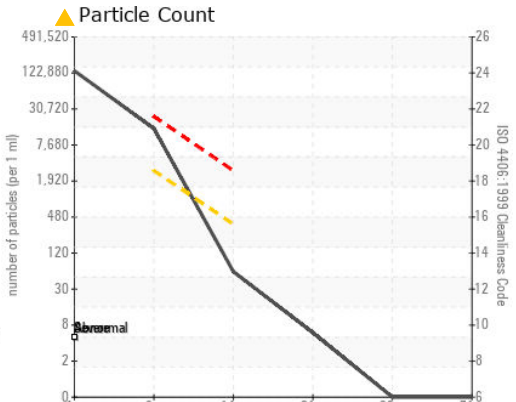
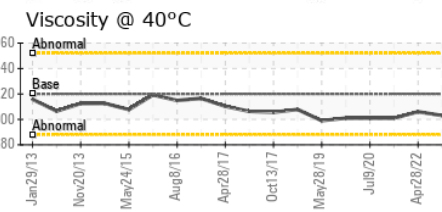
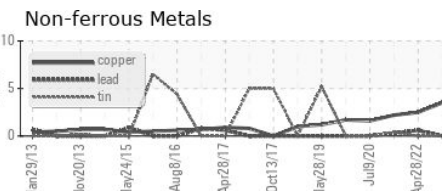
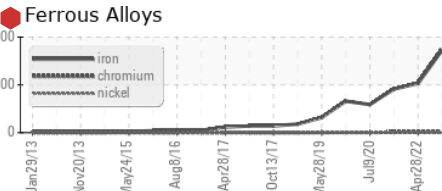
SAMPLE IMAGES		method	limit/base	current	history1	history2
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Color

Bottom



GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : NX05798677 **Received** : 22 Mar 2023
Lab Number : 05798677 **Diagnosed** : 24 Mar 2023
Unique Number : 10388361 **Diagnostician** : Jonathan Hester
Test Package : IND 2 (Additional Tests: KF, PQ, PrtCount)

NORDEX USA - BEEBE
 1200 S COUNTY FARM RD
 ITHACA, MI
 US 48847
 Contact: TUCKER WITT
 tucker.witt@constellation.com
 T:
 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)