



# OIL ANALYSIS REPORT

WEAR	<b>ABNORMAL</b>
CONTAMINATION	<b>NORMAL</b>
FLUID CONDITION	<b>NORMAL</b>

Area

**BEEBE [2000060080]**

Machine Id

**54WEA82670 (S/N 72802120545)**

Component

**Wind Turbine Gearbox**

Fluid

**CASTROL OPTIGEAR SYNTHETIC X 320 (--- LTR)**

## RECOMMENDATION

No corrective action is recommended at this time. Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>NX013786</b>	NX06067701	NX06067693
Sample Date		Client Info		<b>09 Apr 2024</b>	21 Jan 2024	02 Nov 2023
Machine Age	hrs	Client Info		<b>68051</b>	0	78378
Oil Age	hrs	Client Info		<b>0</b>	0	0
Filter Age	hrs	Client Info		<b>0</b>	0	0
Oil Changed		Client Info		<b>N/A</b>	N/A	N/A
Filter Changed		Client Info		<b>N/A</b>	N/A	N/A
Sample Status				<b>ABNORMAL</b>	SEVERE	NORMAL

## WEAR

The aluminum level is abnormal. All other component wear rates are normal.

PQ		ASTM D8184	>80	<b>21</b>	▲ 187	28
Iron	ppm	ASTM D5185m	>150	<b>72</b>	▲ 489	59
Chromium	ppm	ASTM D5185m	>5	<b>1</b>	4	<1
Nickel	ppm	ASTM D5185m	>10	<b>1</b>	3	1
Titanium	ppm	ASTM D5185m	>10	<b>&lt;1</b>	<1	<1
Silver	ppm	ASTM D5185m		<b>&lt;1</b>	0	0
Aluminum	ppm	ASTM D5185m	>10	▲ <b>12</b>	4	5
Lead	ppm	ASTM D5185m	>20	<b>&lt;1</b>	<1	<1
Copper	ppm	ASTM D5185m	>50	<b>1</b>	2	1
Tin	ppm	ASTM D5185m	>10	<b>&lt;1</b>	0	0
Vanadium	ppm	ASTM D5185m		<b>&lt;1</b>	<1	<1
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE

## CONTAMINATION

There is no indication of any contamination in the oil. The amount and size of particulates present in the system are acceptable.

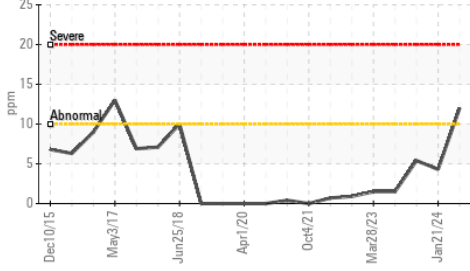
Silicon	ppm	ASTM D5185m	>50	<b>21</b>	15	15
Potassium	ppm	ASTM D5185m	>20	<b>2</b>	2	1
Water	%	ASTM D6304	>0.05	<b>0.00</b>	0.036	0.021
ppm Water	ppm	ASTM D6304	>500	<b>0</b>	369	216
Particles >4µm		ASTM D7647		<b>41030</b>	766	16810
Particles >6µm		ASTM D7647	>2500	<b>1182</b>	117	764
Particles >14µm		ASTM D7647	>320	<b>6</b>	12	11
Particles >21µm		ASTM D7647	>80	<b>2</b>	5	4
Particles >38µm		ASTM D7647	>20	<b>0</b>	2	1
Particles >71µm		ASTM D7647	>4	<b>0</b>	1	1
Oil Cleanliness		ISO 4406 (c)	--/18/15	<b>23/17/10</b>	17/14/11	21/17/11
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

## FLUID CONDITION

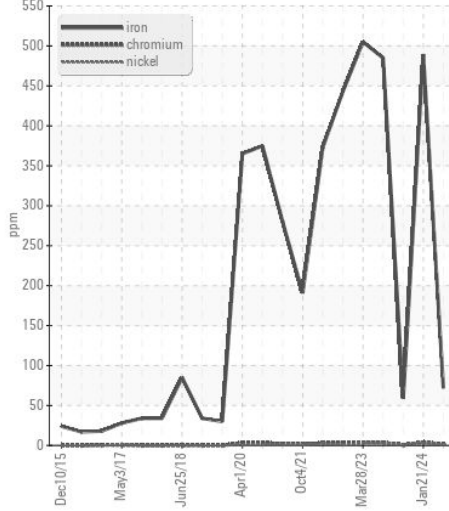
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m	>20	<b>3</b>	5	0
Boron	ppm	ASTM D5185m		<b>&lt;1</b>	0	0
Barium	ppm	ASTM D5185m		<b>6</b>	4	5
Molybdenum	ppm	ASTM D5185m	1150	<b>1392</b>	715	876
Manganese	ppm	ASTM D5185m		<b>2</b>	5	1
Magnesium	ppm	ASTM D5185m		<b>12</b>	21	8
Calcium	ppm	ASTM D5185m	2000	<b>2590</b>	1618	1727
Phosphorus	ppm	ASTM D5185m	400	<b>500</b>	373	380
Zinc	ppm	ASTM D5185m	0	<b>3</b>	2	0
Sulfur	ppm	ASTM D5185m	1850	<b>2875</b>	2104	2321
Acid Number (AN)	mg KOH/g	ASTM D8045	1.6	<b>0.98</b>	0.519	1.06
Visc @ 40°C	cSt	ASTM D445	320	<b>314</b>	320	321

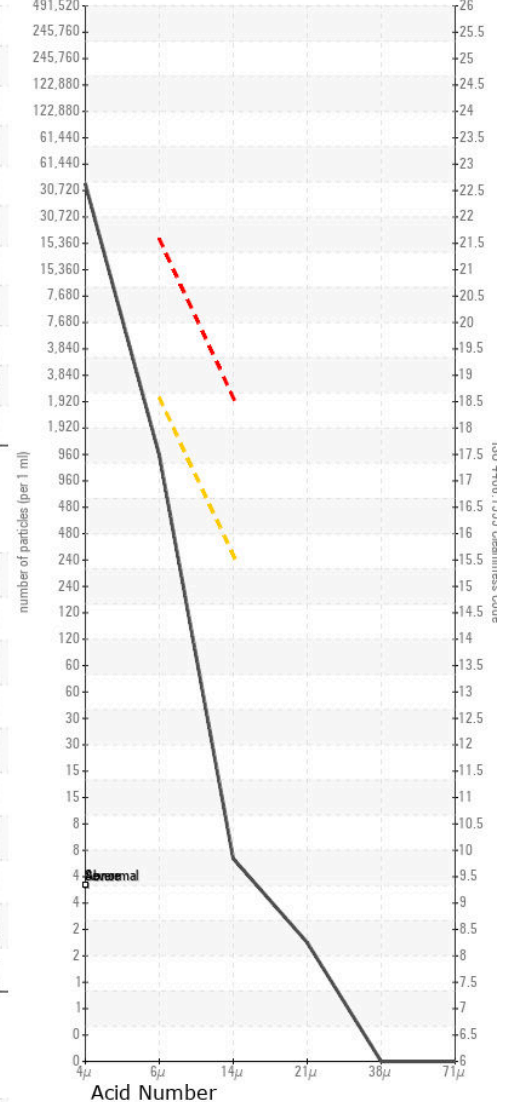
**Aluminum (ppm)**



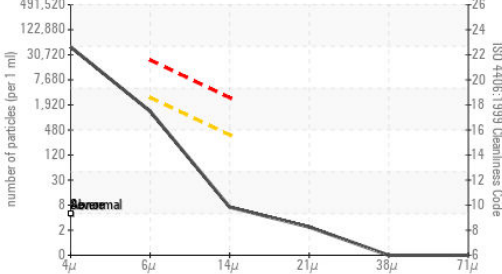
**Ferrous Alloys**



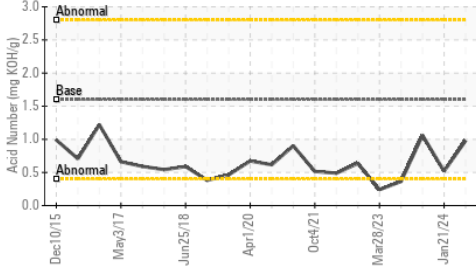
**Particle Count**



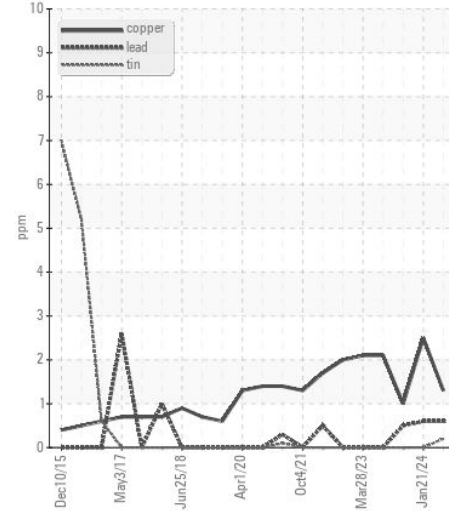
**Particle Count**



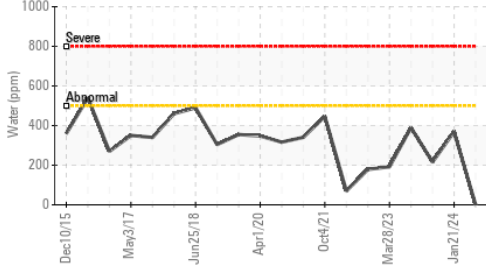
**Acid Number**



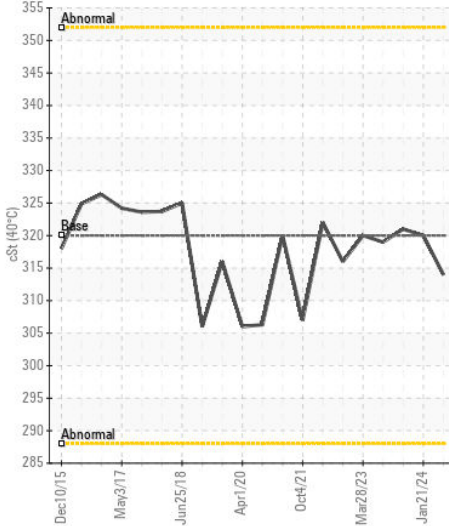
**Non-ferrous Metals**



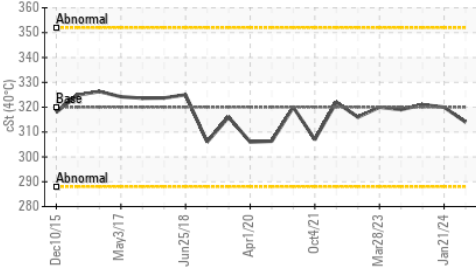
**Water (KF)**



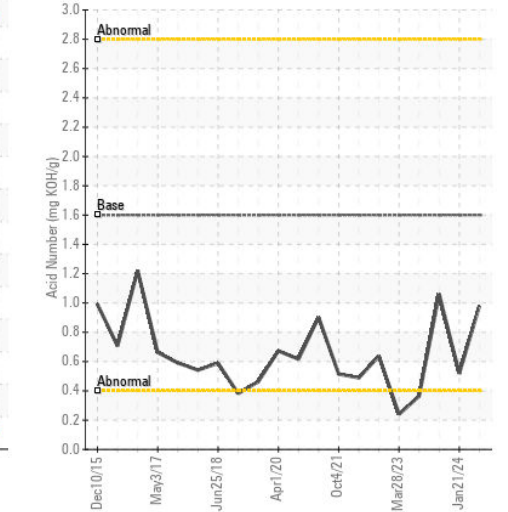
**Viscosity @ 40°C**



**Viscosity @ 40°C**



**Acid Number**



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513

**Sample No.** : NX013786

**Lab Number** : 06146572

**Unique Number** : 10976650

**Test Package** : IND 2 ( Additional Tests: KF, PQ, PrtCount )

**Received** : 11 Apr 2024

**Tested** : 12 Apr 2024

**Diagnosed** : 16 Apr 2024 - Jonathan Hester

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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