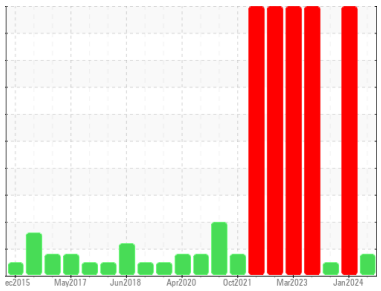
OIL ANALYSIS REPORT

Sample Rating Trend



WEAR

Area
BEEBE [2000060080]
Machine Id
54WEA82670 (S/N 72802120545)
Component
Wind Turbine Gearbox
Fluid
CASTROL OPTIGEAR SYNTHETIC X 320 (--- LTR)

DIAGNOSIS

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

Wear
The aluminum level is abnormal. All other 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		**NX013786**	NX06067701	NX06067693
Sample Date		Client Info		**09 Apr 2024**	21 Jan 2024	02 Nov 2023
Machine Age	hrs	Client Info		**68051**	0	78378
Oil Age	hrs	Client Info		**0**	0	0
Oil Changed		Client Info		**N/A**	N/A	N/A
Sample Status				**ABNORMAL**	SEVERE	NORMAL

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184	>80	**21**	▲ 187	28
Iron	ppm	ASTM D5185m	>150	**72**	▲ 489	59
Chromium	ppm	ASTM D5185m	>5	**1**	4	<1
Nickel	ppm	ASTM D5185m	>10	**1**	3	1
Titanium	ppm	ASTM D5185m	>10	**<1**	<1	<1
Silver	ppm	ASTM D5185m		**<1**	0	0
Aluminum	ppm	ASTM D5185m	>10	▲ **12**	4	5
Lead	ppm	ASTM D5185m	>20	**<1**	<1	<1
Copper	ppm	ASTM D5185m	>50	**1**	2	1
Tin	ppm	ASTM D5185m	>10	**<1**	0	0
Vanadium	ppm	ASTM D5185m		**<1**	<1	<1
Cadmium	ppm	ASTM D5185m		**1**	<1	<1

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**<1**	0	0
Barium	ppm	ASTM D5185m		**6**	4	5
Molybdenum	ppm	ASTM D5185m	1150	**1392**	715	876
Manganese	ppm	ASTM D5185m		**2**	5	1
Magnesium	ppm	ASTM D5185m		**12**	21	8
Calcium	ppm	ASTM D5185m	2000	**2590**	1618	1727
Phosphorus	ppm	ASTM D5185m	400	**500**	373	380
Zinc	ppm	ASTM D5185m	0	**3**	2	0
Sulfur	ppm	ASTM D5185m	1850	**2875**	2104	2321

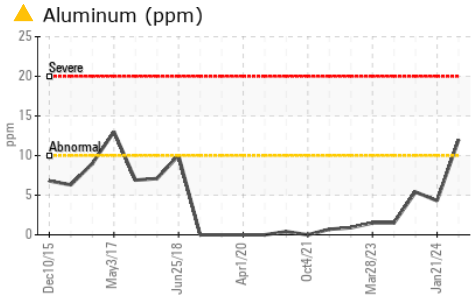
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>50	**21**	15	15
Sodium	ppm	ASTM D5185m	>20	**3**	5	0
Potassium	ppm	ASTM D5185m	>20	**2**	2	1
Water	%	ASTM D6304	>0.05	**0.00**	0.036	0.021
ppm Water	ppm	ASTM D6304	>500	**0**	369	216

FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647		**41030**	766	16810
Particles >6µm		ASTM D7647	>2500	**1182**	117	764
Particles >14µm		ASTM D7647	>320	**6**	12	11
Particles >21µm		ASTM D7647	>80	**2**	5	4
Particles >38µm		ASTM D7647	>20	**0**	2	1
Particles >71µm		ASTM D7647	>4	**0**	1	1
Oil Cleanliness		ISO 4406 (c)	>--/18/15	**23/17/10**	17/14/11	21/17/11

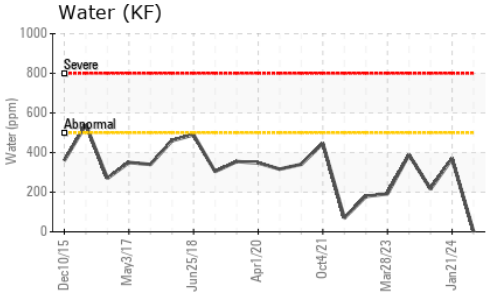
FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	1.6	**0.98**	0.519	1.06

OIL ANALYSIS REPORT

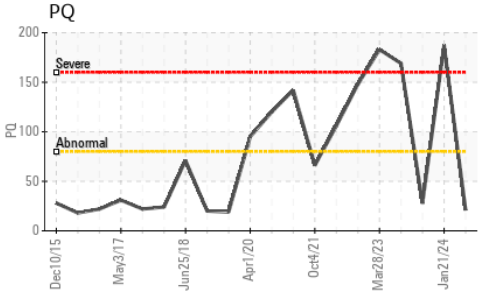
Aluminum (ppm)



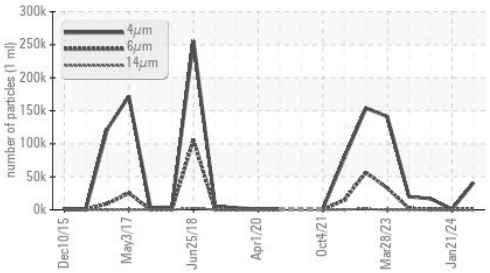
Water (KF)



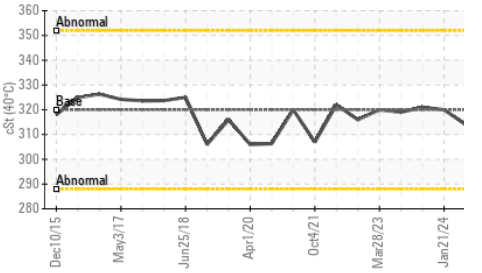
PQ



Particle Trend



Viscosity @ 40°C



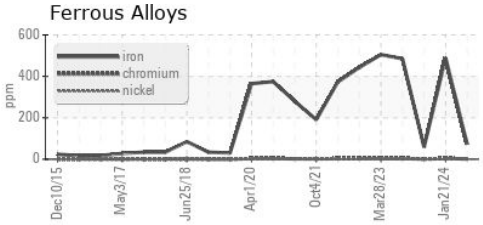
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Appearance	scalar	*Visual	NORML	**NORML**	NORML	NORML
Odor	scalar	*Visual	NORML	**NORML**	NORML	NORML
Emulsified Water	scalar	*Visual	>0.05	**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	**314**	320	321

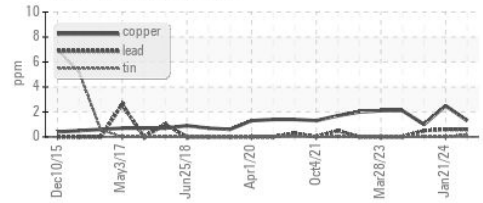
SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					

GRAPHS

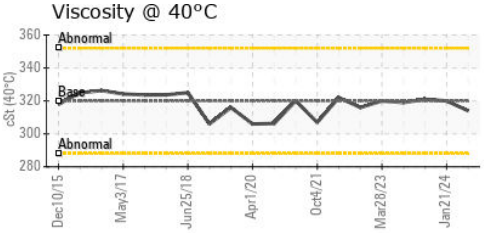
Ferrous Alloys



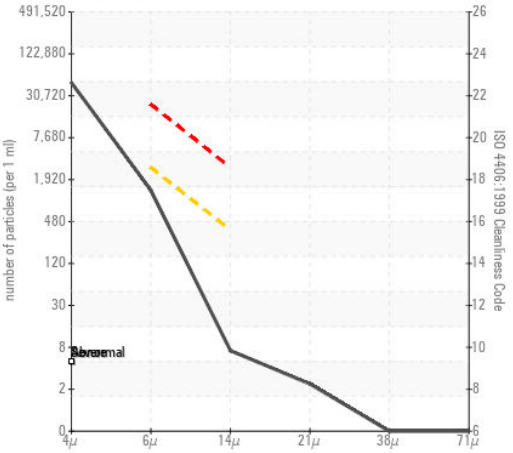
Non-ferrous Metals



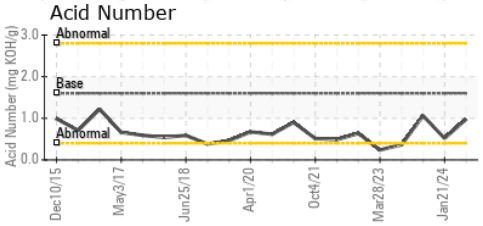
Viscosity @ 40°C



Particle Count



Acid Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : NX013786 **Received** : 11 Apr 2024
Lab Number : 06146572 **Tested** : 12 Apr 2024
Unique Number : 10976650 **Diagnosed** : 16 Apr 2024 - Jonathan Hester
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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Report Id: NORBEE [WUSCAR] 06146572 (Generated: 04/16/2024 09:59:01) Rev: 1
Contact/Location: TUCKER WITT - NORBEE