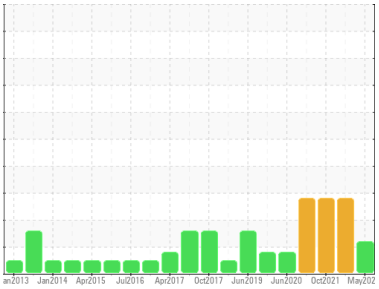
PROBLEM SUMMARY

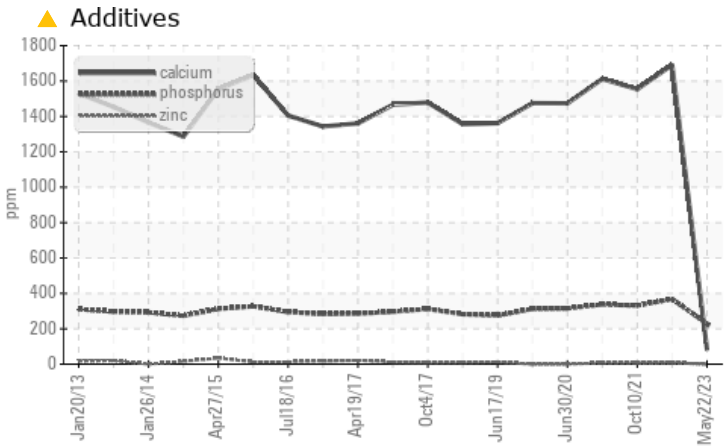
Sample Rating Trend



ADDITIVES

Area
BEEBE [2005316]
Machine Id
20WEA82323
Component
Wind Turbine Gearbox
Fluid
CASTROL OPTIGEAR SYNTHETIC X 320 (4 LTR)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

Resample at the next service interval to monitor.

PROBLEMATIC TEST RESULTS

Sample Status				**ABNORMAL**	ABNORMAL	ABNORMAL
Molybdenum	ppm	ASTM D5185m	1150	▲ **40**	825	754
Calcium	ppm	ASTM D5185m	2000	▲ **83**	1691	1554
Sulfur	ppm	ASTM D5185m	1850	▲ **5910**	1912	1662

Customer Id: NORBEE
Sample No.: NX010893
Lab Number: 05855497
Test Package: IND 2

To manage this report scan the QR code

To discuss the diagnosis or test data:
Doug Bogart +1 (800)237-1369 x4016
dougb@wearcheckusa.com

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

RECOMMENDED ACTIONS

There are no recommended actions for this sample.

HISTORICAL DIAGNOSIS

19 May 2022 Diag: Angela Borella

WEAR

We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.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 amount and size of particulates present in the system are acceptable. The AN level is acceptable for this fluid.

view report

10 Oct 2021 Diag: Jonathan Hester

WEAR

We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.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 amount and size of particulates present in the system are acceptable. The AN level is acceptable for this fluid.

view report

20 Aug 2021 Diag: Jonathan Hester

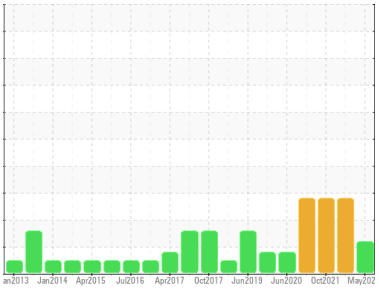
WEAR

We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.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 amount and size of particulates present in the system are acceptable. The AN level is acceptable for this fluid.

view report

OIL ANALYSIS REPORT

Sample Rating Trend



ADDITIVES

Area
BEEBE [2005316]
Machine Id
20WEA82323
Component
Wind Turbine Gearbox
Fluid
CASTROL OPTIGEAR SYNTHETIC X 320 (4 LTR)

DIAGNOSIS

Recommendation
Resample at the next service interval to monitor.

Wear
All 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
Additive levels indicate the addition of a different brand, or type of oil. Confirm oil type. The AN level is acceptable for this fluid.

SAMPLE INFORMATION		method	limit/base	current	history 1	history 2
Sample Number		Client Info		**NX010893**	NX05568728	NX005745
Sample Date		Client Info		**22 May 2023**	19 May 2022	10 Oct 2021
Machine Age	hrs	Client Info		**94444**	79572	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	history 1	history 2
PQ		ASTM D8184	>80	**16**	▲ 111	▲ 109
Iron	ppm	ASTM D5185m	>150	**23**	▲ 396	▲ 373
Chromium	ppm	ASTM D5185m	>5	**<1**	4	4
Nickel	ppm	ASTM D5185m	>10	**<1**	<1	2
Titanium	ppm	ASTM D5185m	>10	**0**	0	0
Silver	ppm	ASTM D5185m		**0**	<1	<1
Aluminum	ppm	ASTM D5185m	>10	**<1**	<1	0
Lead	ppm	ASTM D5185m	>20	**0**	0	<1
Copper	ppm	ASTM D5185m	>50	**0**	3	2
Tin	ppm	ASTM D5185m	>10	**<1**	<1	<1
Antimony	ppm	ASTM D5185m	>5	**---**	---	0
Vanadium	ppm	ASTM D5185m		**0**	<1	<1
Cadmium	ppm	ASTM D5185m		**0**	0	<1

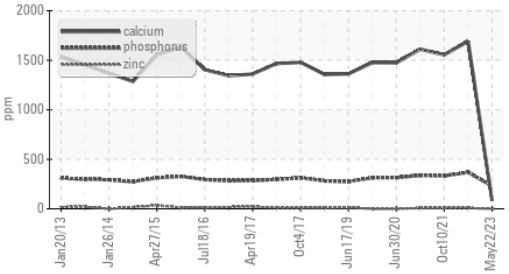
ADDITIVES		method	limit/base	current	history 1	history 2
Boron	ppm	ASTM D5185m		**2**	21	<1
Barium	ppm	ASTM D5185m		**0**	2	0
Molybdenum	ppm	ASTM D5185m	1150	▲ **40**	825	754
Manganese	ppm	ASTM D5185m		**<1**	4	3
Magnesium	ppm	ASTM D5185m		**2**	23	24
Calcium	ppm	ASTM D5185m	2000	▲ **83**	1691	1554
Phosphorus	ppm	ASTM D5185m	400	**228**	368	331
Zinc	ppm	ASTM D5185m	0	**0**	8	7
Sulfur	ppm	ASTM D5185m	1850	▲ **5910**	1912	1662

CONTAMINANTS		method	limit/base	current	history 1	history 2
Silicon	ppm	ASTM D5185m	>50	**2**	11	8
Sodium	ppm	ASTM D5185m	>20	**2**	7	6
Potassium	ppm	ASTM D5185m	>20	**3**	0	<1
Water	%	ASTM D6304	>0.05	**0.008**	0.028	0.025
ppm Water	ppm	ASTM D6304	>500	**89.6**	287.2	251.5

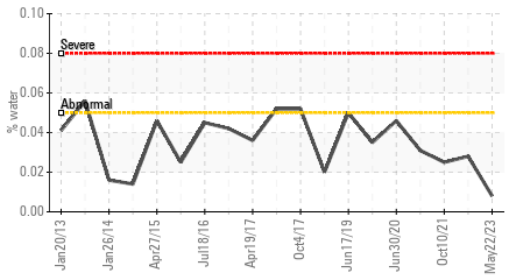
FLUID CLEANLINESS		method	limit/base	current	history 1	history 2
Particles >4µm		ASTM D7647		**23424**	7405	36667
Particles >6µm		ASTM D7647	>2500	**1153**	1394	1751
Particles >14µm		ASTM D7647	>320	**29**	75	16
Particles >21µm		ASTM D7647	>80	**7**	13	3
Particles >38µm		ASTM D7647	>20	**1**	0	0
Particles >71µm		ASTM D7647	>4	**0**	0	0
Oil Cleanliness		ISO 4406 (c)	>--/18/15	**22/17/12**	20/18/13	22/18/11

OIL ANALYSIS REPORT

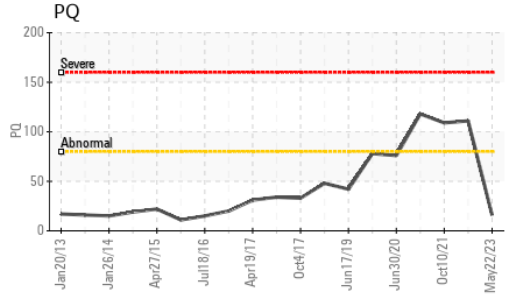
Additives



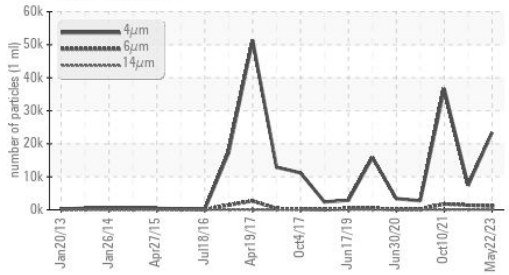
Water



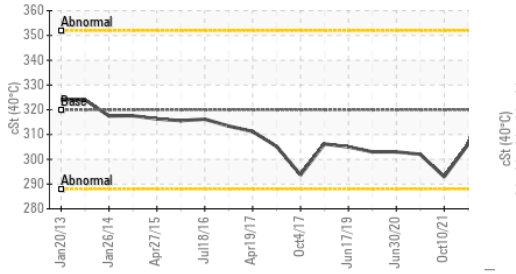
PQ



Particle Trend



Viscosity @ 40°C

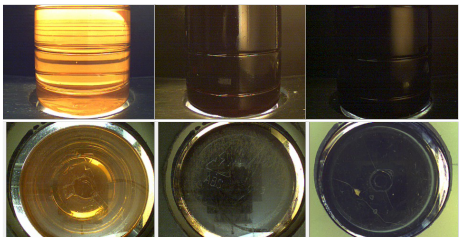


FLUID DEGRADATION		method	limit/base	current	history 1	history 2
Acid Number (AN)	mg KOH/g	ASTM D8045	1.6	**0.25**	0.33	0.343

VISUAL		method	limit/base	current	history 1	history 2
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

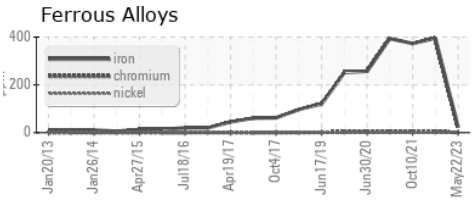
FLUID PROPERTIES		method	limit/base	current	history 1	history 2
Visc @ 40°C	cSt	ASTM D445	320	**330**	306	292.9

SAMPLE IMAGES	method	limit/base	current	history 1	history 2
Color					
Bottom					

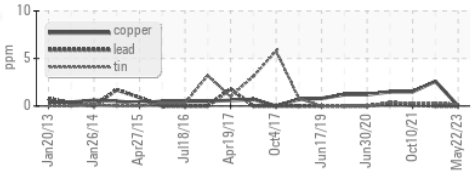


GRAPHS

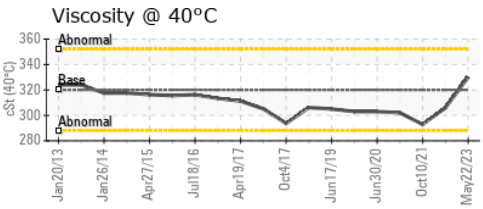
Ferrous Alloys



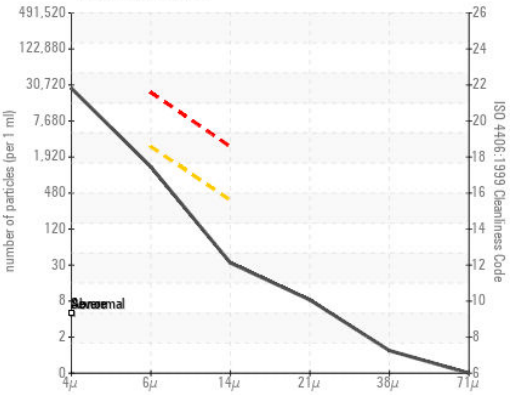
Non-ferrous Metals



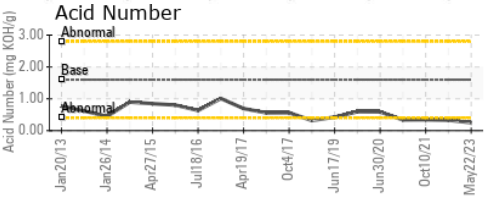
Viscosity @ 40°C



Particle Count



Acid Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : NX010893 **Received** : 24 May 2023
Lab Number : 05855497 **Diagnosed** : 05 Jun 2023
Unique Number : 10484852 **Diagnostician** : Doug Bogart
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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