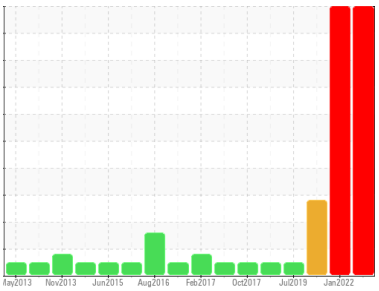
PROBLEM SUMMARY

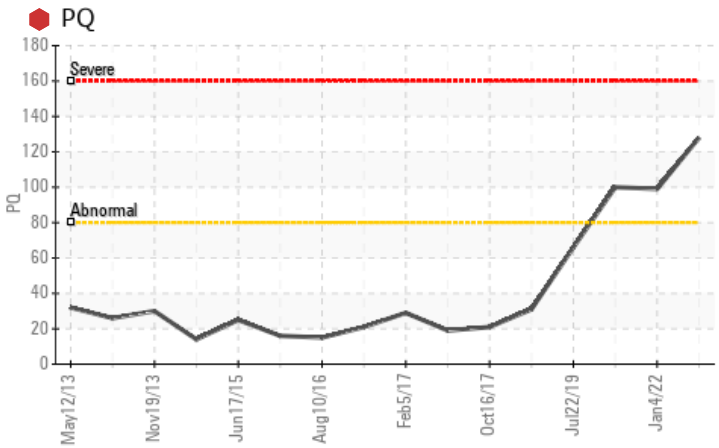
Sample Rating Trend

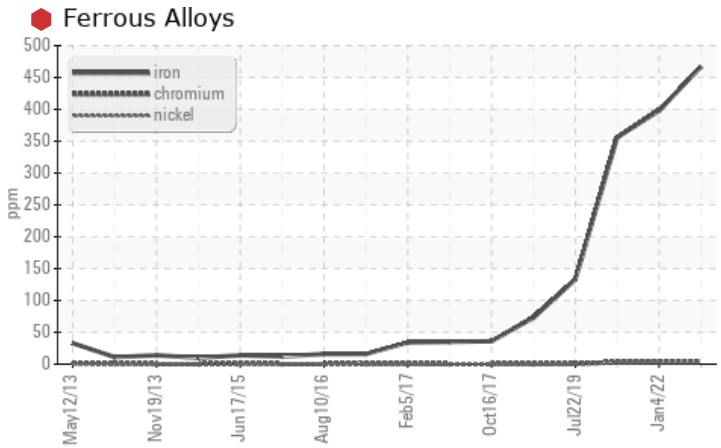


WEAR

Area
BEEBE [200005316]
Machine Id
02WEA82344
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	SEVERE	ABNORMAL
PQ		ASTM D8184	>80	**128**	99	100
Iron	ppm	ASTM D5185m	>150	**467**	398	356

Customer Id: NORBEE
Sample No.: NX05798669
Lab Number: 05798669
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

04 Jan 2022 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 very high ferrous density (PQ) index indicates that severe 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

23 Jul 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

22 Jul 2019 Diag: Don Baldridge

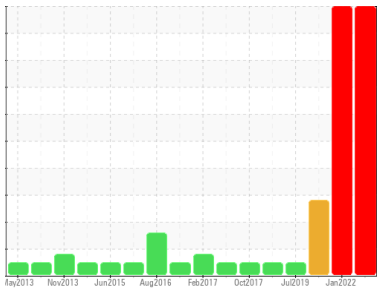
NORMAL

Resample at the next service interval to monitor.All component wear rates are normal. 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

OIL ANALYSIS REPORT

Sample Rating Trend



WEAR

Area
BEEBE [200005316]
Machine Id
02WEA82344
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 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.

SAMPLE INFORMATION	method	limit/base	current	history1	history2
Sample Number	Client Info		**NX05798669**	NX05473534	NX005675
Sample Date	Client Info		**23 Jan 2023**	04 Jan 2022	23 Jul 2021
Machine Age hrs	Client Info		**26476**	65800	62602
Oil Age hrs	Client Info		**0**	0	0
Oil Changed	Client Info		**N/A**	N/A	N/A
Sample Status			**SEVERE**	SEVERE	ABNORMAL

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184	>80	**128**	99	100
Iron	ppm	ASTM D5185m	>150	**467**	398	356
Chromium	ppm	ASTM D5185m	>5	**4**	4	3
Nickel	ppm	ASTM D5185m	>10	**3**	3	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**	<1	<1
Copper	ppm	ASTM D5185m	>50	**2**	2	2
Tin	ppm	ASTM D5185m	>10	**0**	<1	<1
Antimony	ppm	ASTM D5185m	>5	**---**	<1	0
Vanadium	ppm	ASTM D5185m		**0**	<1	<1
Cadmium	ppm	ASTM D5185m		**0**	0	<1

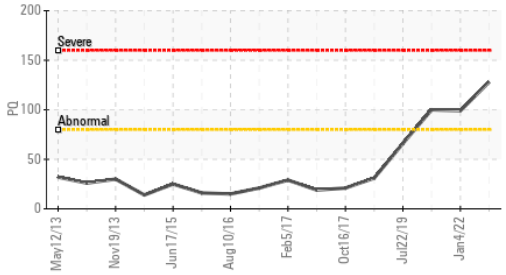
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**0**	16	<1
Barium	ppm	ASTM D5185m		**1**	0	0
Molybdenum	ppm	ASTM D5185m	1150	**680**	707	742
Manganese	ppm	ASTM D5185m		**4**	3	3
Magnesium	ppm	ASTM D5185m		**15**	21	18
Calcium	ppm	ASTM D5185m	2000	**1416**	1626	1558
Phosphorus	ppm	ASTM D5185m	400	**289**	363	328
Zinc	ppm	ASTM D5185m	0	**10**	5	6
Sulfur	ppm	ASTM D5185m	1850	**1587**	1650	1643

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>50	**11**	12	8
Sodium	ppm	ASTM D5185m	>20	**0**	5	5
Potassium	ppm	ASTM D5185m	>20	**<1**	<1	<1
Water	%	ASTM D6304	>0.05	**0.013**	0.006	0.043
ppm Water	ppm	ASTM D6304	>500	**136.9**	69.9	432.9

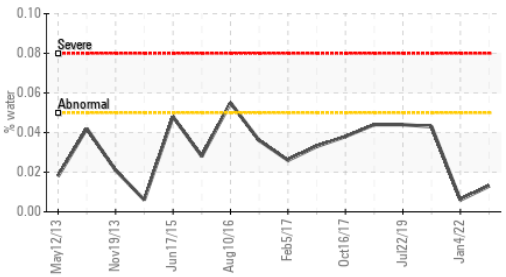
FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		**1631**	17265	2438
Particles >6µm	ASTM D7647	>2500	**190**	1717	411
Particles >14µm	ASTM D7647	>320	**8**	44	24
Particles >21µm	ASTM D7647	>80	**2**	7	6
Particles >38µm	ASTM D7647	>20	**0**	0	1
Particles >71µm	ASTM D7647	>4	**0**	0	0
Oil Cleanliness	ISO 4406 (c)	>--/18/15	**18/15/10**	21/18/13	18/16/12

OIL ANALYSIS REPORT

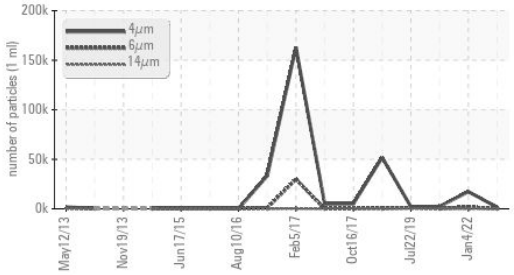
PQ



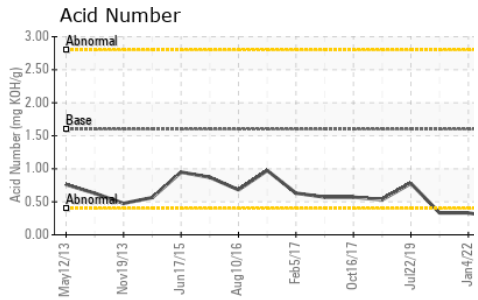
Water



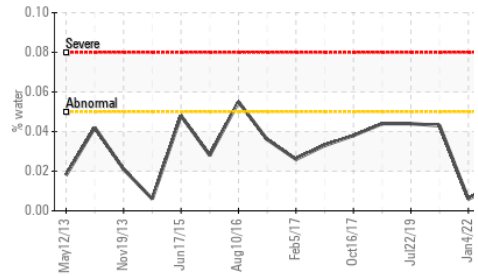
Particle Trend



Acid Number



Water

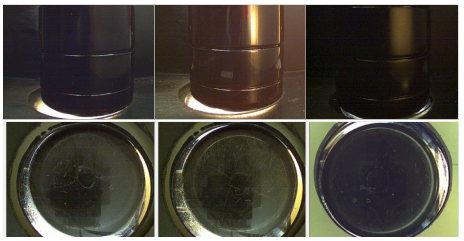


FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	1.6	**0.262**	0.332	0.331

VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	LIGHT	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

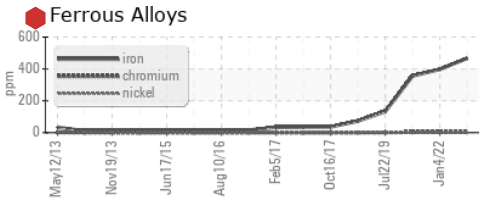
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	320	**304**	307	306

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					

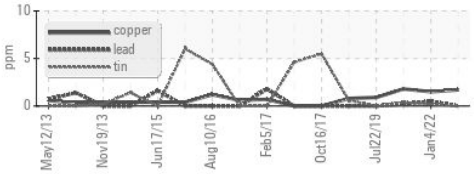


GRAPHS

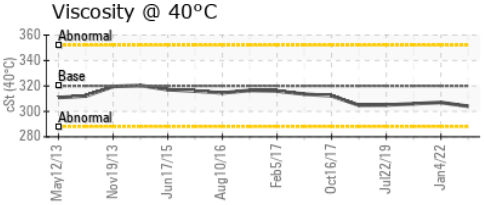
Ferrous Alloys



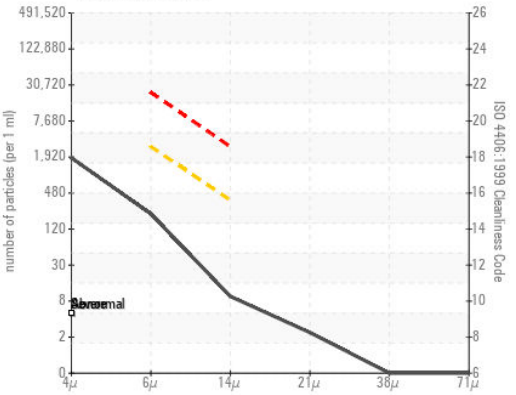
Non-ferrous Metals



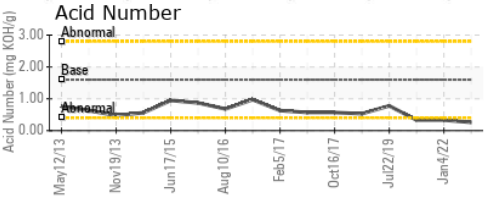
Viscosity @ 40°C



Particle Count



Acid Number



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : NX05798669 **Received** : 22 Mar 2023
Lab Number : 05798669 **Diagnosed** : 24 Mar 2023
Unique Number : 10388353 **Diagnostician** : Jonathan Hester
Test Package : IND 2 (Additional Tests: KF, PQ, PrtCount)

Certificate L2367

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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