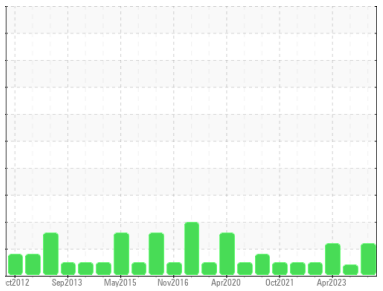
OIL ANALYSIS REPORT

Sample Rating Trend



SEDIMENT

Area
ROTH ROCK [200005321]
Machine Id
17WEA81561
Component
Wind Turbine Gearbox
Fluid
CASTROL OPTIGEAR SYNTHETIC A ISO 320 (--- LTR)

DIAGNOSIS

Recommendation
We recommend you service the filters on this component if applicable. Resample at the next service interval to monitor. We were unable to perform a particle count due to a high concentration of particles present in this sample.

Wear
All component wear rates are normal.

Contamination
There is a moderate amount of visible silt present in the sample.

Fluid Condition
An additive depletion is indicated. The AN level is acceptable for this fluid.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**NX016982**	NX012200	NX012199
Sample Date		Client Info		**16 Apr 2024**	11 Oct 2023	04 Apr 2023
Machine Age	hrs	Client Info		**0**	0	0
Oil Age	hrs	Client Info		**0**	0	0
Oil Changed		Client Info		**N/A**	N/A	N/A
Sample Status				**ABNORMAL**	ATTENTION	ABNORMAL

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184	>80	**20**	16	16
Iron	ppm	ASTM D5185m	>150	**61**	50	57
Chromium	ppm	ASTM D5185m	>5	**<1**	<1	<1
Nickel	ppm	ASTM D5185m	>10	**0**	0	<1
Titanium	ppm	ASTM D5185m	>10	**<1**	0	<1
Silver	ppm	ASTM D5185m		**<1**	0	0
Aluminum	ppm	ASTM D5185m	>10	**3**	7	<1
Lead	ppm	ASTM D5185m	>20	**<1**	0	<1
Copper	ppm	ASTM D5185m	>50	**<1**	2	<1
Tin	ppm	ASTM D5185m	>10	**0**	0	<1
Vanadium	ppm	ASTM D5185m		**<1**	<1	0
Cadmium	ppm	ASTM D5185m		**0**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	**0**	11	0
Barium	ppm	ASTM D5185m	0	**0**	0	0
Molybdenum	ppm	ASTM D5185m	1150	**568**	563	585
Manganese	ppm	ASTM D5185m		**1**	2	2
Magnesium	ppm	ASTM D5185m	1800	**1708**	1654	1657
Calcium	ppm	ASTM D5185m	20	**12**	23	16
Phosphorus	ppm	ASTM D5185m	1450	**1215**	1178	1204
Zinc	ppm	ASTM D5185m	1650	**1415**	1349	1350
Sulfur	ppm	ASTM D5185m	4900	**5986**	5198	5784

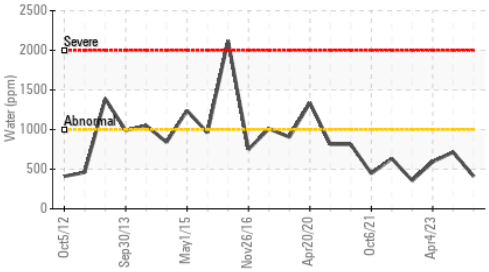
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>50	**10**	10	10
Sodium	ppm	ASTM D5185m	>20	**20**	20	21
Potassium	ppm	ASTM D5185m	>20	**<1**	0	2
Water	%	ASTM D6304	>0.1	**0.041**	0.071	0.059
ppm Water	ppm	ASTM D6304	>1000	**411**	714	593.2

FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647		**---**	1606	---
Particles >6µm		ASTM D7647	>2500	**---**	161	---
Particles >14µm		ASTM D7647	>320	**---**	9	---
Particles >21µm		ASTM D7647	>80	**---**	1	---
Particles >38µm		ASTM D7647	>20	**---**	0	---
Particles >71µm		ASTM D7647	>4	**---**	0	---
Oil Cleanliness		ISO 4406 (c)	>--/18/15	**---**	18/15/10	---

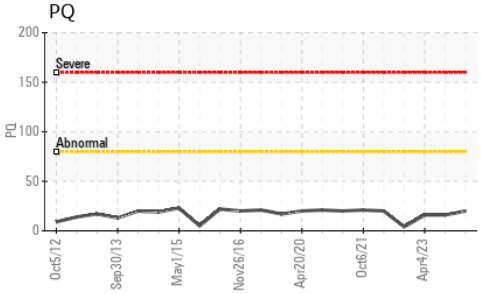
FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	3.3	**1.76**	2.484	1.56

OIL ANALYSIS REPORT

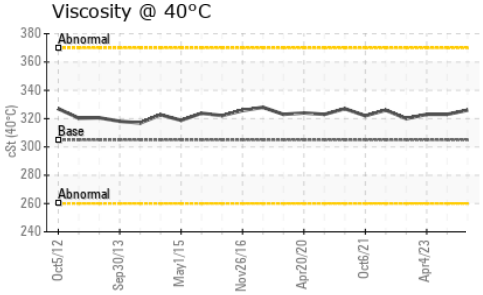
Water (KF)



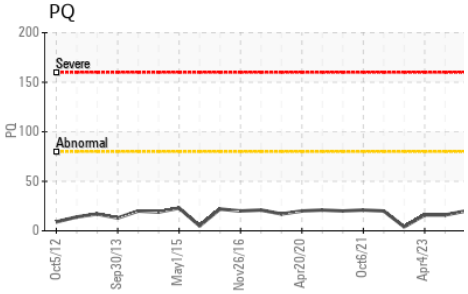
PQ



Viscosity @ 40°C

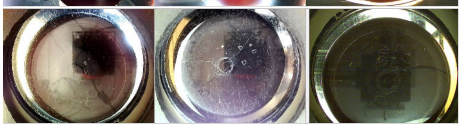


PQ



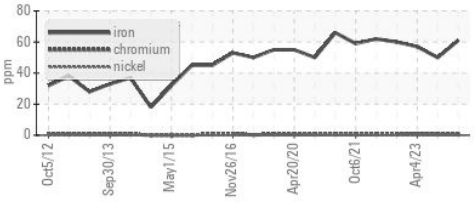
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	▲ **MODER**	NONE	▲ HEAVY
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
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	>0.1	**NEG**	NEG	NEG
Free Water	scalar	*Visual		**NEG**	NEG	NEG

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	305	**326**	323	323

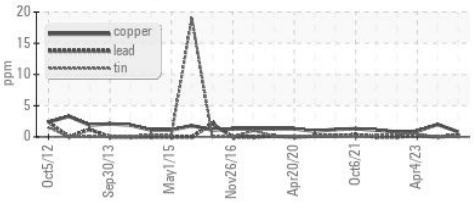
SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					

GRAPHS

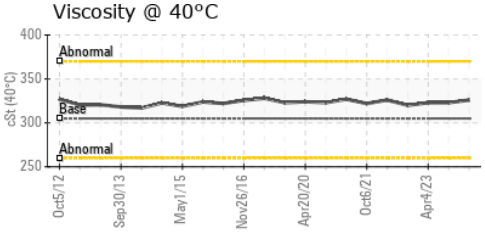
Ferrous Alloys



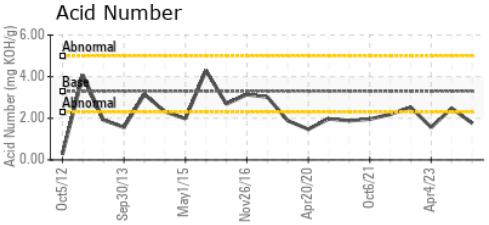
Non-ferrous Metals



Viscosity @ 40°C



Acid Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : NX016982
Lab Number : 06182840
Unique Number : 11034166
Test Package : IND 2 (Additional Tests: KF, PQ, PrtCount)

Received : 17 May 2024
Tested : 21 May 2024
Diagnosed : 21 May 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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