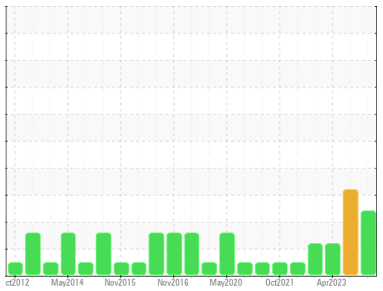
OIL ANALYSIS REPORT

Sample Rating Trend



WATER

Area
ROTH ROCK [200005321]
Machine Id
15WEA81560
Component
Wind Turbine Gearbox
Fluid
CASTROL OPTIGEAR SYNTHETIC A ISO 320 (--- LTR)

DIAGNOSIS

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

Wear
All component wear rates are normal.

Contamination
There is a moderate amount of silt (particulates < 14 microns in size) present in the oil. There is a trace of moisture present in the oil.

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		**NX016958**	NX013882	NX012925
Sample Date		Client Info		**17 Apr 2024**	24 Oct 2023	26 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				**ATTENTION**	ABNORMAL	ABNORMAL

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184	>80	**25**	20	31
Iron	ppm	ASTM D5185m	>150	**33**	7	76
Chromium	ppm	ASTM D5185m	>5	**<1**	0	<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	**5**	▲ 15	<1
Lead	ppm	ASTM D5185m	>20	**<1**	0	0
Copper	ppm	ASTM D5185m	>50	**1**	2	2
Tin	ppm	ASTM D5185m	>10	**<1**	0	<1
Vanadium	ppm	ASTM D5185m		**0**	<1	0
Cadmium	ppm	ASTM D5185m		**<1**	0	0

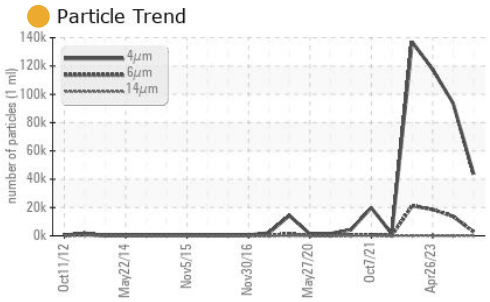
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	**0**	25	0
Barium	ppm	ASTM D5185m	0	**0**	0	0
Molybdenum	ppm	ASTM D5185m	1150	**1067**	1143	● 275
Manganese	ppm	ASTM D5185m		**1**	<1	1
Magnesium	ppm	ASTM D5185m	1800	**1929**	1779	1299
Calcium	ppm	ASTM D5185m	20	**18**	19	6
Phosphorus	ppm	ASTM D5185m	1450	**1482**	1444	1157
Zinc	ppm	ASTM D5185m	1650	**1638**	1699	1369
Sulfur	ppm	ASTM D5185m	4900	**7399**	6309	6025

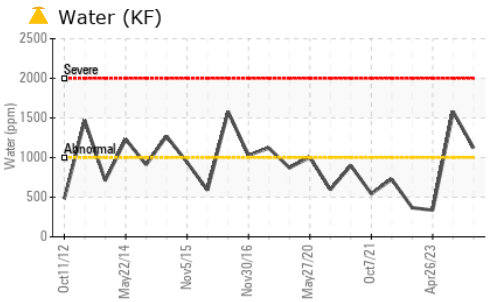
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>50	**15**	28	7
Sodium	ppm	ASTM D5185m	>20	**2**	3	11
Potassium	ppm	ASTM D5185m	>20	**4**	0	1
Water	%	ASTM D6304	>0.1	▲ **0.111**	▲ 0.158	0.033
ppm Water	ppm	ASTM D6304	>1000	▲ **1120**	▲ 1580	335.6

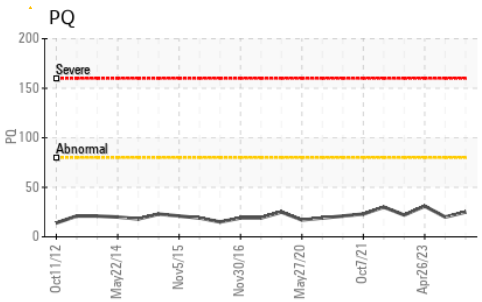
FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647		**43580**	93642	117600
Particles >6µm		ASTM D7647	>2500	● **2802**	▲ 13787	▲ 18554
Particles >14µm		ASTM D7647	>320	**20**	58	55
Particles >21µm		ASTM D7647	>80	**3**	6	8
Particles >38µm		ASTM D7647	>20	**1**	0	0
Particles >71µm		ASTM D7647	>4	**1**	0	0
Oil Cleanliness		ISO 4406 (c)	>--/18/15	● **23/19/11**	▲ 24/21/13	▲ 24/21/13

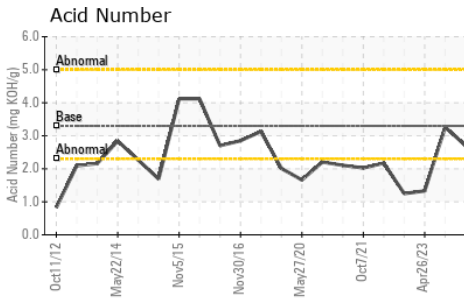
FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	3.3	**2.70**	3.26	1.33

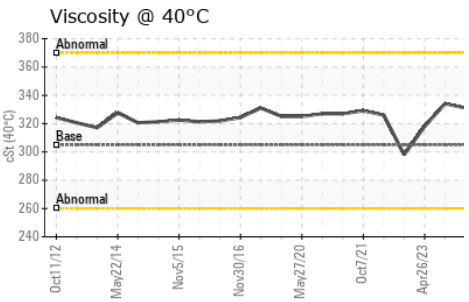
OIL ANALYSIS REPORT









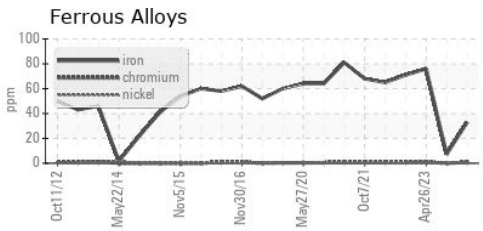


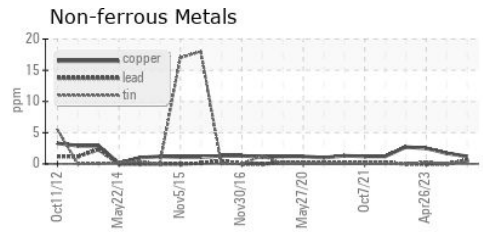
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Appearance	scalar	*Visual	NORML	**NORML**	NORML	NORML
Odor	scalar	*Visual	NORML	**NORML**	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	**NEG**	NEG	NEG
Free Water	scalar	*Visual		**NEG**	NEG	NEG

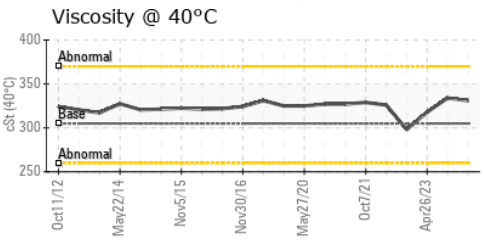
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	305	**331**	334	318

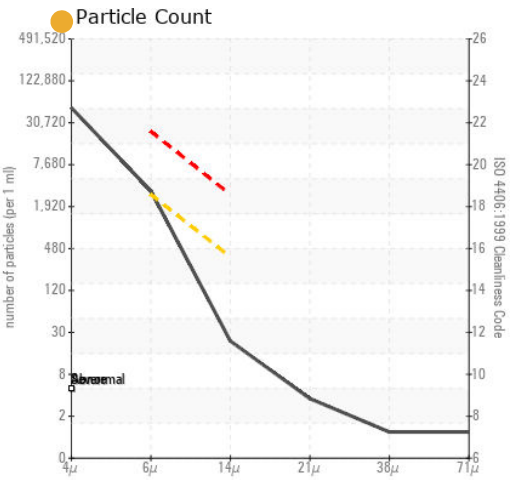
SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					

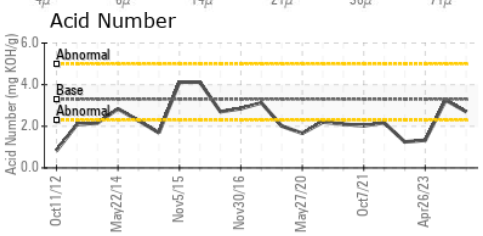
GRAPHS











Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : NX016958 **Received** : 17 May 2024
Lab Number : 06182828 **Tested** : 30 May 2024
Unique Number : 11034154 **Diagnosed** : 30 May 2024 - 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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