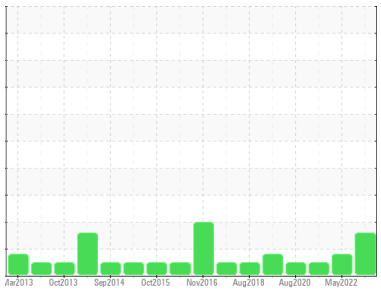
OIL ANALYSIS REPORT

Sample Rating Trend



WEAR

Area
EVA CREEK
Machine Id
WEC 5 - 91980 (S/N 26114)
Component
Wind Turbine Gearbox
Fluid
CASTROL OPTIGEAR SYNTHETIC A ISO 320 (500 GAL)

DIAGNOSIS

Recommendation
We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. We recommend an early resample to monitor this condition.

Wear
Gear wear is indicated.

Contamination
There is a high amount of silt (particulates < 14 microns in size) 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		**WC0634822**	WC0634815	WC0544200
Sample Date		Client Info		**03 Apr 2024**	25 May 2022	28 May 2021
Machine Age	hrs	Client Info		**30565**	78972	73980
Oil Age	hrs	Client Info		**30565**	0	73980
Oil Changed		Client Info		**N/A**	N/A	Not Changd
Sample Status				**ABNORMAL**	ABNORMAL	NORMAL

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184	>80	**28**	23	27
Iron	ppm	ASTM D5185m	>70	▲ **281**	▲ 264	253
Chromium	ppm	ASTM D5185m	>3	**5**	5	4
Nickel	ppm	ASTM D5185m	>2	**0**	0	<1
Titanium	ppm	ASTM D5185m	>10	**0**	0	<1
Silver	ppm	ASTM D5185m		**0**	<1	0
Aluminum	ppm	ASTM D5185m	>9	**15**	2	2
Lead	ppm	ASTM D5185m	>9	**0**	<1	<1
Copper	ppm	ASTM D5185m	>25	**2**	3	3
Tin	ppm	ASTM D5185m	>9	**<1**	0	<1
Antimony	ppm	ASTM D5185m	>5	**---**	---	0
Vanadium	ppm	ASTM D5185m		**<1**	<1	<1
Cadmium	ppm	ASTM D5185m		**<1**	0	<1

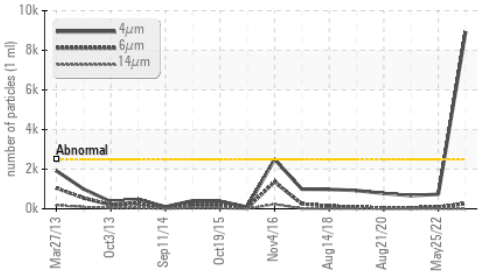
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	**35**	2	6
Barium	ppm	ASTM D5185m	0	**5**	4	0
Molybdenum	ppm	ASTM D5185m	1150	**1205**	1201	1277
Manganese	ppm	ASTM D5185m		**5**	4	4
Magnesium	ppm	ASTM D5185m	1800	**1883**	1841	1926
Calcium	ppm	ASTM D5185m	20	**14**	14	23
Phosphorus	ppm	ASTM D5185m	1450	**1514**	1403	1474
Zinc	ppm	ASTM D5185m	1650	**1692**	1659	1726
Sulfur	ppm	ASTM D5185m	4900	**7472**	5904	5857

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>33	**15**	17	16
Sodium	ppm	ASTM D5185m	>20	**8**	6	6
Potassium	ppm	ASTM D5185m	>20	**4**	1	4
Water	%	ASTM D6304	>.110	**0.018**	0.031	0.036
ppm Water	ppm	ASTM D6304	>1100	**184**	312.3	369.9

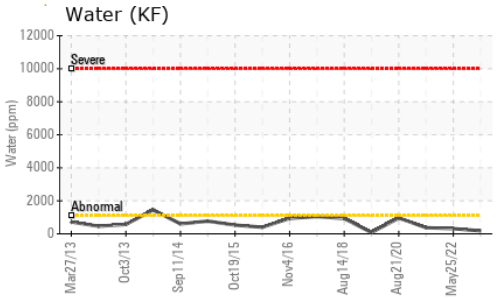
FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>2500	▲ **8940**	736	668
Particles >6µm		ASTM D7647	>640	**265**	75	53
Particles >14µm		ASTM D7647	>80	**8**	6	5
Particles >21µm		ASTM D7647	>20	**2**	2	1
Particles >38µm		ASTM D7647	>4	**0**	0	0
Particles >71µm		ASTM D7647	>3	**0**	0	0
Oil Cleanliness		ISO 4406 (c)	>18/16/13	▲ **20/15/10**	17/13/10	17/13/10

OIL ANALYSIS REPORT

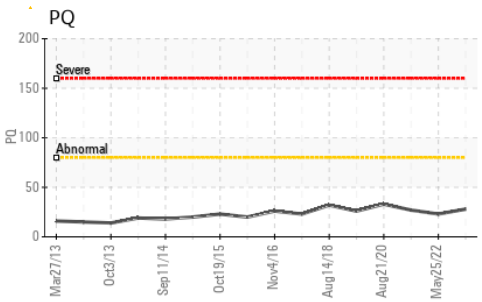
Particle Trend



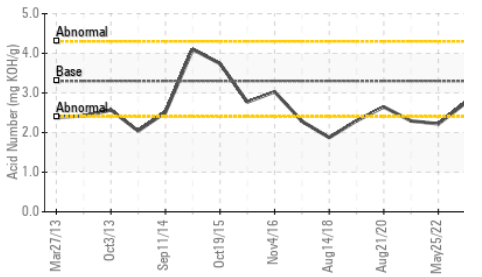
Water (KF)



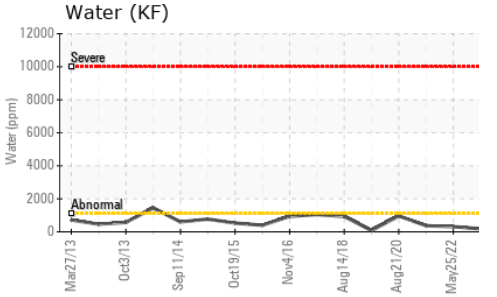
PQ



Acid Number



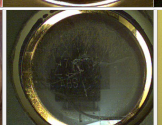
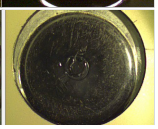
Water (KF)



FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	3.3	**2.75**	2.22	2.293

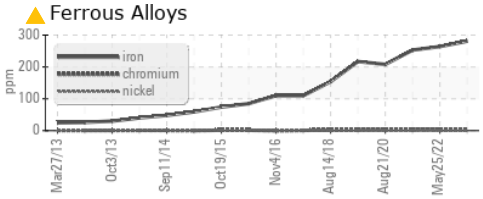
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Appearance	scalar	*Visual	NORML	**NORML**	NORML	NORML
Odor	scalar	*Visual	NORML	**NORML**	NORML	NORML
Emulsified Water	scalar	*Visual	>.110	**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	**334**	327	330

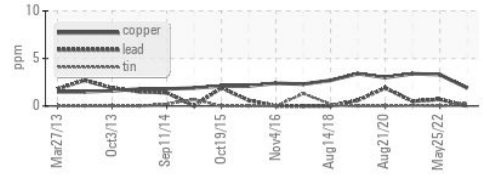
SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					

GRAPHS

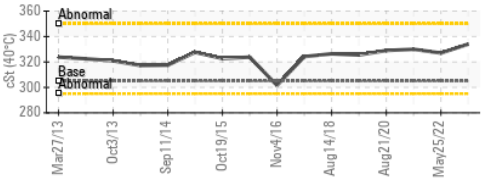
Ferrous Alloys



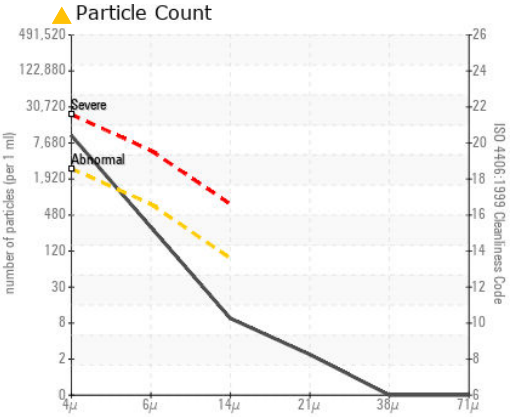
Non-ferrous Metals



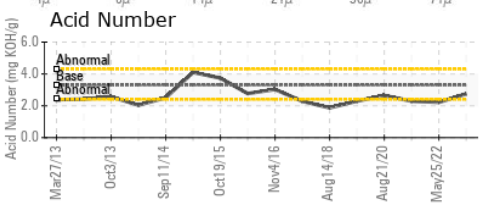
Viscosity @ 40°C



Particle Count



Acid Number



ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY
Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0634822 **Received** : 10 May 2024
Lab Number : 06176150 **Tested** : 16 May 2024
Unique Number : 11022203 **Diagnosed** : 16 May 2024 - Angela Borella
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: REPHEA [WUSCAR] 06176150 (Generated: 05/16/2024 12:49:47) Rev: 1
Contact/Location: RYAN DEWITT - REPHEA