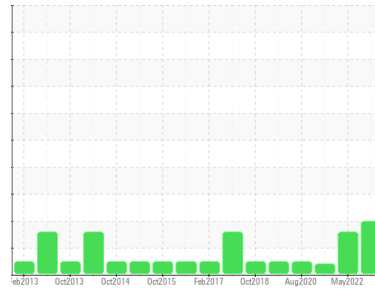




OIL ANALYSIS REPORT

Sample Rating Trend



WEAR



Area
EVA CREEK
 Machine Id
WEC 4 - 91979 (S/N 26100)
 Component
Wind Turbine Gearbox
 Fluid
CASTROL OPTIGEAR SYNTHETIC A ISO 320 (450 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		WC0634823	WC0634814	WC0544201
Sample Date	Client Info		26 Mar 2024	24 May 2022	18 May 2021
Machine Age	hrs	Client Info	80315	76208	71481
Oil Age	hrs	Client Info	0	0	71481
Oil Changed	Client Info		Changed	N/A	Not Changd
Sample Status			ABNORMAL	ABNORMAL	ABNORMAL

WEAR METALS

	method	limit/base	current	history1	history2	
PQ	ASTM D8184	>80	28	22	27	
Iron	ppm	ASTM D5185m	>90	▲ 247	▲ 243	239
Chromium	ppm	ASTM D5185m	>4	4	5	4
Nickel	ppm	ASTM D5185m	>3	0	0	<1
Titanium	ppm	ASTM D5185m	>10	0	0	<1
Silver	ppm	ASTM D5185m		0	<1	0
Aluminum	ppm	ASTM D5185m	>10	11	2	2
Lead	ppm	ASTM D5185m	>11	0	<1	<1
Copper	ppm	ASTM D5185m	>55	3	5	6
Tin	ppm	ASTM D5185m	>10	<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	24	2	5
Barium	ppm	ASTM D5185m	0	5	4	0
Molybdenum	ppm	ASTM D5185m	1150	894	1058	1169
Manganese	ppm	ASTM D5185m		5	4	4
Magnesium	ppm	ASTM D5185m	1800	1778	1807	1895
Calcium	ppm	ASTM D5185m	20	14	14	14
Phosphorus	ppm	ASTM D5185m	1450	1449	1362	1449
Zinc	ppm	ASTM D5185m	1650	1565	1604	1683
Sulfur	ppm	ASTM D5185m	4900	6822	5523	5540

CONTAMINANTS

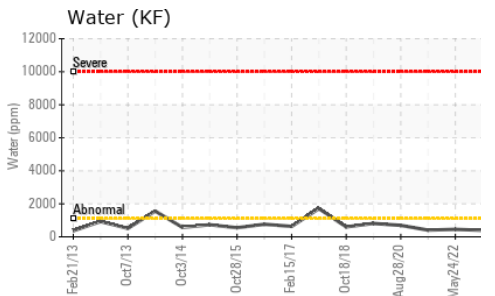
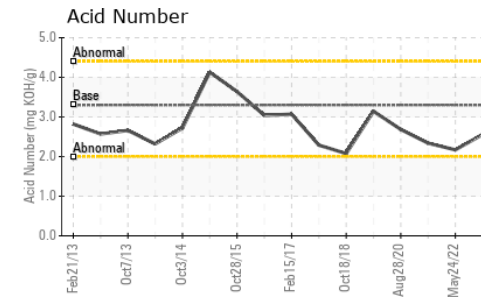
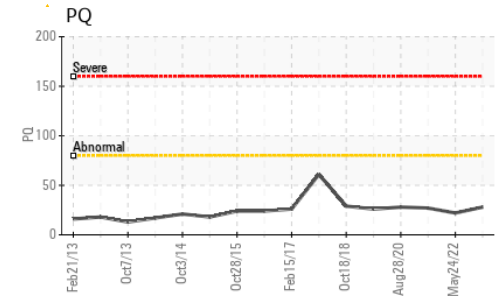
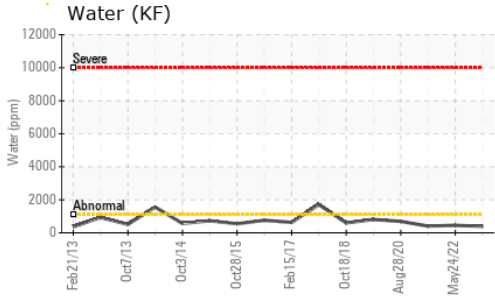
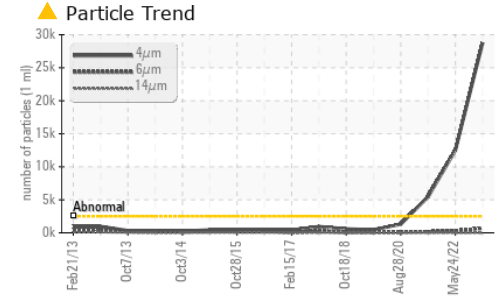
	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>35	13	16	15
Sodium	ppm	ASTM D5185m	>25	10	6	6
Potassium	ppm	ASTM D5185m	>20	0	0	2
Water	%	ASTM D6304	>.110	0.039	0.045	0.040
ppm Water	ppm	ASTM D6304	>1100	395	453.4	406.4

FLUID CLEANLINESS

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>2500	▲ 28770	▲ 12485	▲ 5456
Particles >6µm	ASTM D7647	>640	● 669	313	162
Particles >14µm	ASTM D7647	>80	8	6	3
Particles >21µm	ASTM D7647	>20	3	2	0
Particles >38µm	ASTM D7647	>4	1	0	0
Particles >71µm	ASTM D7647	>3	0	0	0
Oil Cleanliness	ISO 4406 (c)	>18/16/13	▲ 22/17/10	▲ 21/15/10	▲ 20/15/9



OIL ANALYSIS REPORT

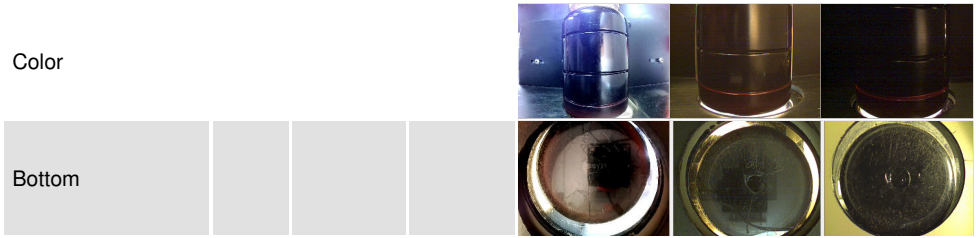


FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	3.3	2.56	2.17	2.338

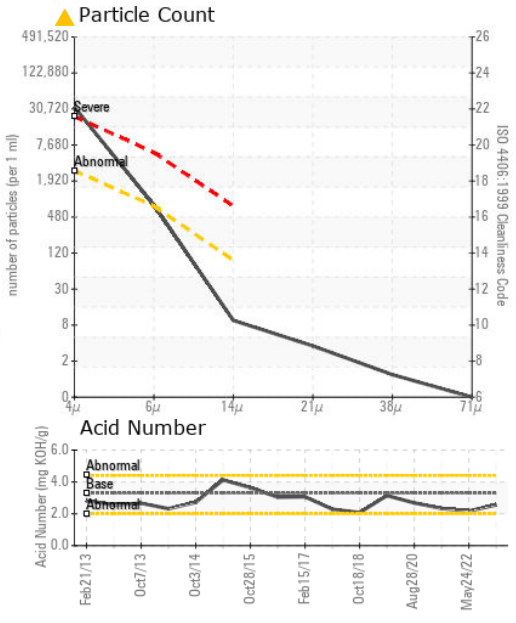
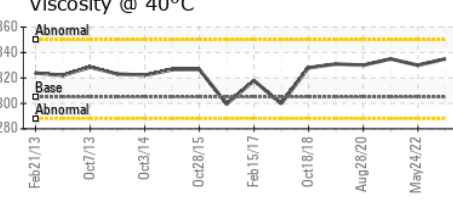
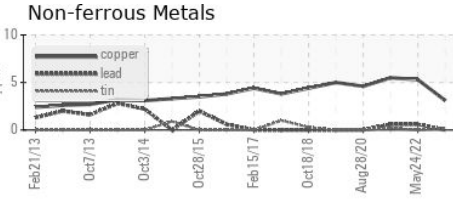
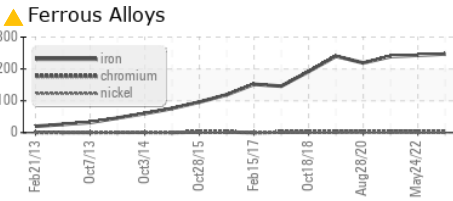
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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	335	330	335

SAMPLE IMAGES		method	limit/base	current	history1	history2
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GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0634823 **Received** : 10 May 2024
Lab Number : **06176147** **Tested** : 16 May 2024
Unique Number : 11022200 **Diagnosed** : 16 May 2024 - Angela Borella
Test Package : IND 2 (Additional Tests: KF, PQ, PrtCount)

GOLDEN VALLEY ELECTRIC
 MILE 2.5 HEALY SPUR RD
 HEALY, AK
 US 99743
 Contact: RYAN DEWITT
 rjdewitt@gvea.com

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)