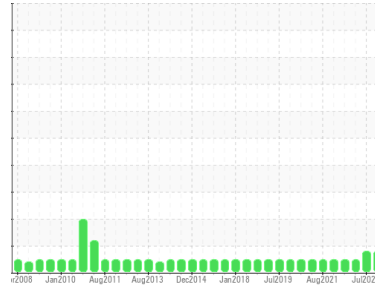




OIL ANALYSIS REPORT

Sample Rating Trend



WEAR



Area
Ravenswood SP-24224
 Machine Id
T5 (S/N 23963)

Component
Wind Turbine Gearbox
 Fluid
MOBIL MOBILGEAR SHC XMP 320 (280 LTR)

DIAGNOSIS

Recommendation

We recommend an early resample to monitor this condition.

Wear

Copper ppm levels are abnormal. Bearing and/or bushing wear is indicated.

Contamination

The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The water content is negligible. The system and fluid cleanliness is acceptable. NOTE: An increase in the particle count is noted.

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		WC0863464	WC0783106	WC0783078
Sample Date	Client Info		08 Jan 2024	04 Jul 2023	10 Jan 2023
Machine Age	mths	Client Info	0	0	0
Oil Age	mths	Client Info	0	0	0
Oil Changed	Client Info		N/A	N/A	N/A
Sample Status			ABNORMAL	ABNORMAL	NORMAL

WEAR METALS

	method	limit/base	current	history1	history2
PQ	ASTM D8184*	>50	0	0	0
Iron	ppm	ASTM D5185(m)	>75	11	10
Chromium	ppm	ASTM D5185(m)	>5	0	0
Nickel	ppm	ASTM D5185(m)	>10	<1	<1
Titanium	ppm	ASTM D5185(m)	>10	0	0
Silver	ppm	ASTM D5185(m)		0	0
Aluminum	ppm	ASTM D5185(m)	>10	<1	0
Lead	ppm	ASTM D5185(m)	>15	<1	0
Copper	ppm	ASTM D5185(m)	>5	8	6
Tin	ppm	ASTM D5185(m)	>10	0	0
Antimony	ppm	ASTM D5185(m)	>5	0	0
Vanadium	ppm	ASTM D5185(m)		0	0
Beryllium	ppm	ASTM D5185(m)		0	0
Cadmium	ppm	ASTM D5185(m)		0	0

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)	0	<1	1
Barium	ppm	ASTM D5185(m)		0	0
Molybdenum	ppm	ASTM D5185(m)	0	0	0
Manganese	ppm	ASTM D5185(m)		0	0
Magnesium	ppm	ASTM D5185(m)		<1	0
Calcium	ppm	ASTM D5185(m)	0	<1	<1
Phosphorus	ppm	ASTM D5185(m)	485	328	349
Zinc	ppm	ASTM D5185(m)	0	24	22
Sulfur	ppm	ASTM D5185(m)		3597	3547
Lithium	ppm	ASTM D5185(m)		<1	<1

CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>40	5	6
Sodium	ppm	ASTM D5185(m)	>10	0	<1
Potassium	ppm	ASTM D5185(m)	>20	<1	<1
Water	%	ASTM D6304*	>0.02	0.004	0.010
ppm Water	ppm	ASTM D6304*	>200	49	104.4

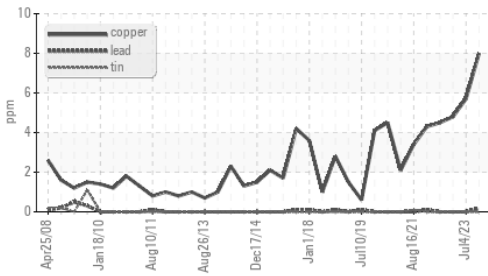
INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*		0	0
Nitration	Abs/cm	ASTM D7624*		2.1	2.3
Sulfation	Abs/.1mm	ASTM D7415*		47.5	48.0



OIL ANALYSIS REPORT

▲ Non-ferrous Metals



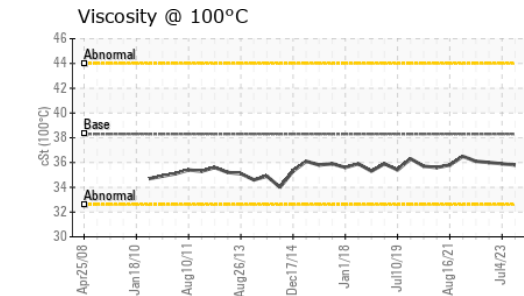
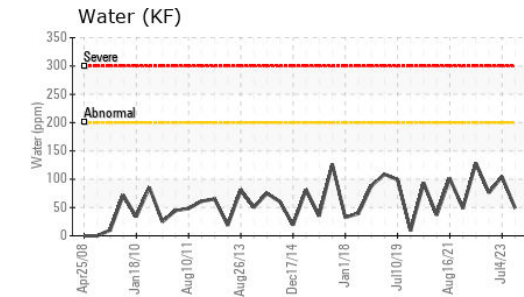
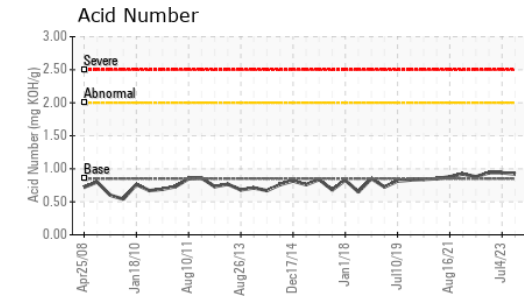
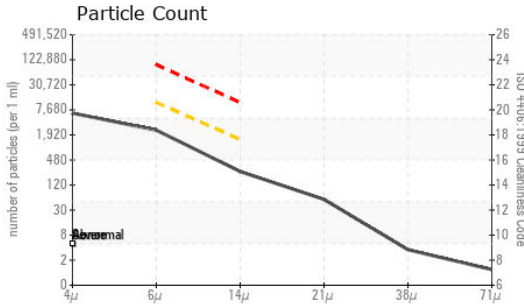
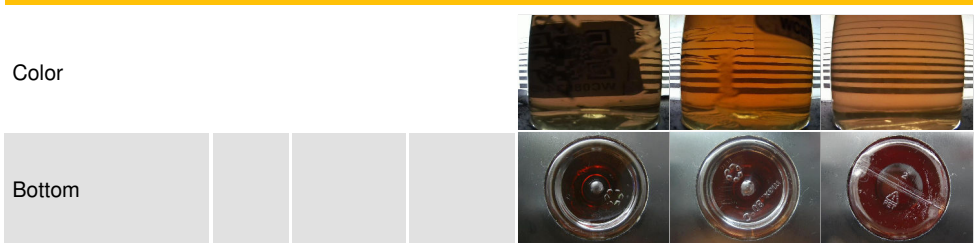
FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		5580	2290	1919
Particles >6µm	ASTM D7647	>10000	2182	622	396
Particles >14µm	ASTM D7647	>1300	223	60	15
Particles >21µm	ASTM D7647	>320	48	20	3
Particles >38µm	ASTM D7647	>80	3	3	0
Particles >71µm	ASTM D7647	>20	1	2	0
Oil Cleanliness	ISO 4406 (c)	>--/20/17	20/18/15	18/16/13	18/16/11

FLUID DEGRADATION	method	limit/base	current	history1	history2
Oxidation	Abs./1mm	ASTM D7414*	54.9	54.3	55.3
Acid Number (AN)	mg KOH/g	ASTM D974*	0.92	0.94	0.94

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

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	335	316	315
Visc @ 100°C	cSt	ASTM D7279(m)	38.3	35.8	35.9
Viscosity Index (VI)	Scale	ASTM D2270*	164	160	161

SAMPLE IMAGES



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 Vestas American Wind Technology Inc.
Sample No. : WC0863464 **Received** : 12 Jan 2024
Lab Number : **02608637** **Diagnosed** : 16 Jan 2024
Unique Number : 5709723 **Diagnostician** : Kevin Marson
Test Package : IND 2 (Additional Tests: FT-IR, KF, KV100, PQ, TAN Man, VI)

To discuss this sample report, contact Customer Service at 1-800-268-2131.
 Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
 Validity of results and interpretation are based on the sample and information as supplied.

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