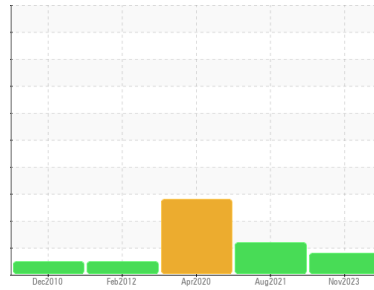


PROBLEM SUMMARY

Sample Rating Trend



ISO



Machine Id

F-10

Component

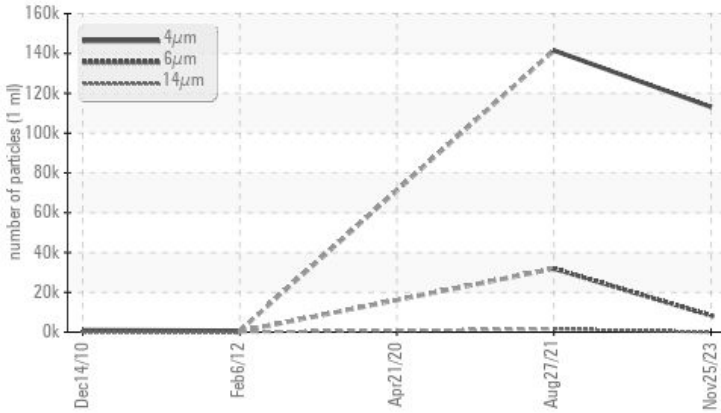
Wind Turbine Gearbox

Fluid

ROYAL PURPLE SYNFILM GT 320 (65 GAL)

COMPONENT CONDITION SUMMARY

▲ Particle Trend



RECOMMENDATION

Replace filter element and resample at later date. In case already attempted and cleanliness was not improved then proceed to replace oil.

PROBLEMATIC TEST RESULTS

Sample Status		MARGINAL	ABNORMAL	ABNORMAL
Particles >6µm	ASTM D7647 >5000	▲ 8329	▲ 31885	---
Oil Cleanliness	ISO 4406 (c) >--/19/16	▲ 24/20/12	▲ 24/22/18	---

Customer Id: MITWHI
Sample No.: MHI021530
Lab Number: 06016358
Test Package: IND 2



To manage this report scan the QR code

To discuss the diagnosis or test data:
Jonathan Hester +1 919-379-4092 x4092
jhester@wearcheckusa.com

To change component or sample information:
Customer Service +1 1-800-237-1369
customerservice@wearcheck.com

RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Change Filter	---	---	?	Replace filter element and resample at later date. In case already attempted and cleanliness was not improved then proceed to replace oil.
Resample	---	---	?	Replace filter element and resample at later date. In case already attempted and cleanliness was not improved then proceed to replace oil.

HISTORICAL DIAGNOSIS

27 Aug 2021 Diag: Jonathan Hester

ISO



Replace filter element and resample at later date. In case already attempted and cleanliness was not improved then proceed to replace oil. All component wear rates are normal. There is a high amount of particulates present in the oil. The AN level is acceptable for this fluid.

[view report](#)



21 Apr 2020 Diag: Doug Bogart

WATER



Replace filter element and resample at later date. In case already attempted and cleanliness was not improved then proceed to replace oil. We advise that you follow the water drain-off procedure for this component. We were unable to perform a particle count due to a high concentration of particles present in this sample. All component wear rates are normal. Moderate concentration of visible dirt/debris present in the oil. There is a moderate amount of visible silt present in the sample. Free water present. The AN level is acceptable for this fluid.

[view report](#)



06 Feb 2012 Diag: Doug Bogart

VISCOSITY



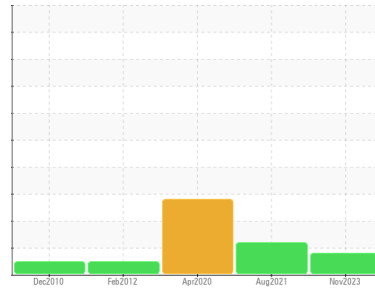
We advise an early resample to confirm this situation. All component wear rates are normal. There is a moderate amount of particulates present in the oil. Additive levels indicate the addition of a different brand, or type of oil. Viscosity of sample indicates oil is within ISO 32 range, advise investigate. Appears to be hydraulic oil.

[view report](#)



OIL ANALYSIS REPORT

Sample Rating Trend



ISO



Machine Id
F-10
 Component
Wind Turbine Gearbox
 Fluid
ROYAL PURPLE SYNFILM GT 320 (65 GAL)

DIAGNOSIS

Recommendation

Replace filter element and resample at later date. In case already attempted and cleanliness was not improved then proceed to replace oil.

Wear

All component wear rates are normal.

Contamination

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

Fluid Condition

The AN level is acceptable for this fluid.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		MHI021530	MHI019990	MHI023844
Sample Date	Client Info		25 Nov 2023	27 Aug 2021	21 Apr 2020
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			MARGINAL	ABNORMAL	ABNORMAL

WEAR METALS

	method	limit/base	current	history1	history2
PQ	ASTM D8184	>200	18	24	31
Iron	ppm	ASTM D5185m	>200	10	10
Chromium	ppm	ASTM D5185m	>3	<1	0
Nickel	ppm	ASTM D5185m	>3	0	<1
Titanium	ppm	ASTM D5185m	>10	<1	0
Silver	ppm	ASTM D5185m		0	0
Aluminum	ppm	ASTM D5185m	>30	2	0
Lead	ppm	ASTM D5185m	>15	0	<1
Copper	ppm	ASTM D5185m	>75	6	17
Tin	ppm	ASTM D5185m	>10	0	0
Antimony	ppm	ASTM D5185m	>5	---	0
Vanadium	ppm	ASTM D5185m		0	0
Cadmium	ppm	ASTM D5185m		0	0

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		0	<1
Barium	ppm	ASTM D5185m		0	0
Molybdenum	ppm	ASTM D5185m		<1	<1
Manganese	ppm	ASTM D5185m		0	0
Magnesium	ppm	ASTM D5185m	90	1	0
Calcium	ppm	ASTM D5185m		0	<1
Phosphorus	ppm	ASTM D5185m		0	25
Zinc	ppm	ASTM D5185m		0	7
Sulfur	ppm	ASTM D5185m		18302	15366

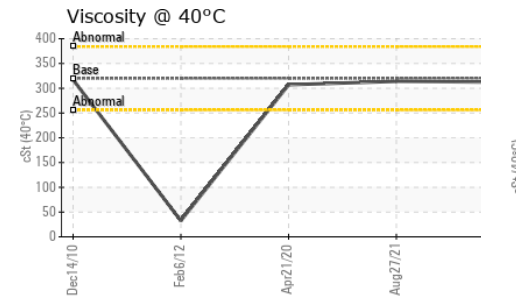
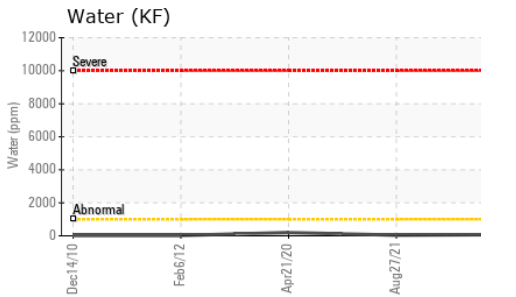
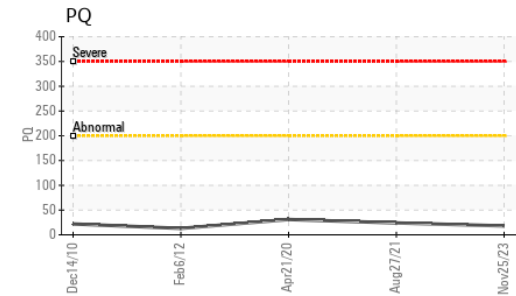
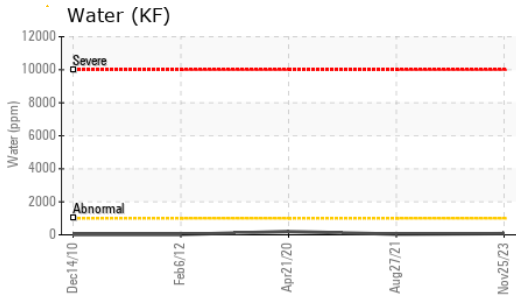
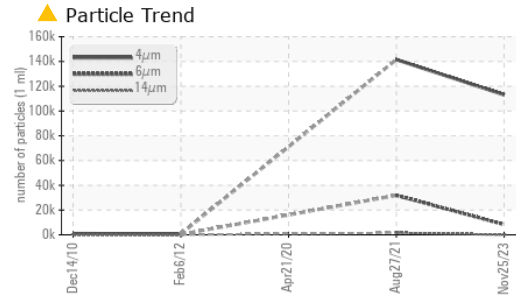
CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>+30	2	9
Sodium	ppm	ASTM D5185m		0	0
Potassium	ppm	ASTM D5185m	>20	1	0
Water	%	ASTM D6304	>0.1	0.007	0.003
ppm Water	ppm	ASTM D6304	>1000	74	38.2

FLUID CLEANLINESS

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		113097	141539	---
Particles >6µm	ASTM D7647	>5000	8329	31885	---
Particles >14µm	ASTM D7647	>640	39	1582	---
Particles >21µm	ASTM D7647	>160	6	279	---
Particles >38µm	ASTM D7647	>40	0	25	---
Particles >71µm	ASTM D7647	>10	0	3	---
Oil Cleanliness	ISO 4406 (c)	>--/19/16	24/20/12	24/22/18	---

OIL ANALYSIS REPORT

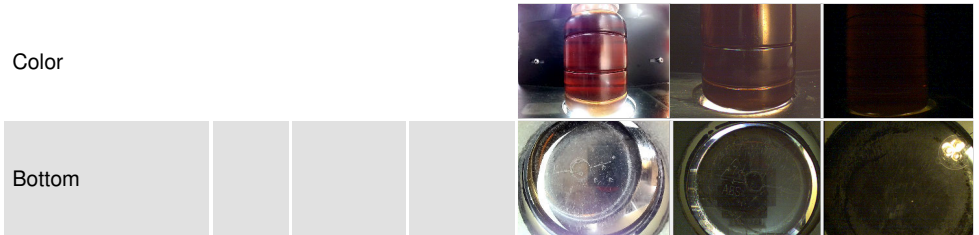


FLUID DEGRADATION	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045 0.25	0.40	0.40	0.361

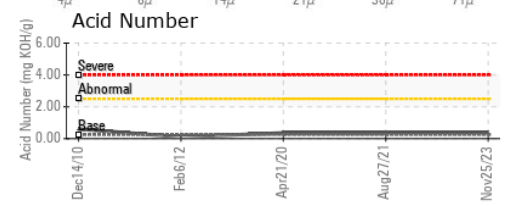
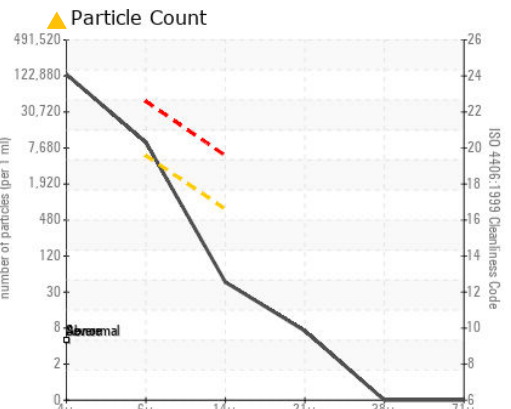
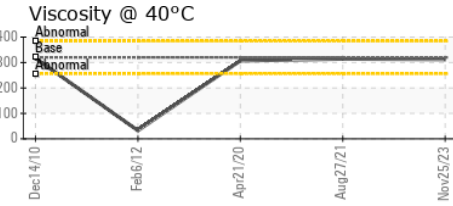
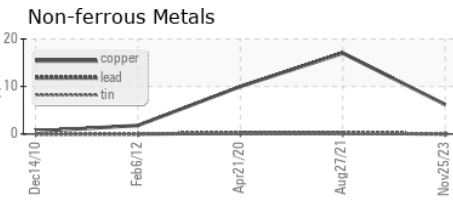
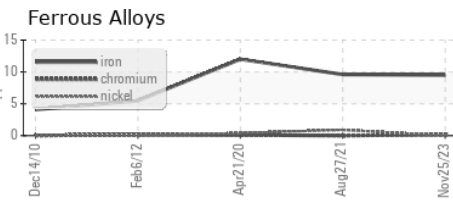
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual NONE	NONE	LIGHT	NONE
Yellow Metal	scalar	*Visual NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual NONE	NONE	NONE	NONE
Silt	scalar	*Visual NONE	NONE	NONE	▲ MODER
Debris	scalar	*Visual NONE	NONE	LIGHT	▲ MODER
Sand/Dirt	scalar	*Visual 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	0.2%
Free Water	scalar	*Visual	NEG	NEG	▲ 1.0

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445 320	312	314	307

SAMPLE IMAGES	method	limit/base	current	history1	history2
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GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : MH1021530 **Received** : 24 Nov 2023
Lab Number : 06016358 **Diagnosed** : 28 Nov 2023
Unique Number : 10755502 **Diagnostician** : Jonathan Hester
Test Package : IND 2 (Additional Tests: KF, PQ, PrtCount)

DIAMOND WTG - WHITE DEER SITE - MPS WD
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 US 79097
 Contact: WESLEY CAMPBELL
 wesley.campbell@diamondwtg.com
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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)