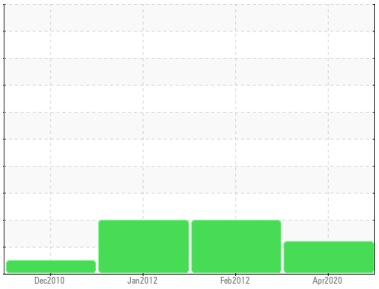
DIAMOND WTG ENGINEERING & SERVICES, INC.
a group company of MITSUBISHI HEAVY INDUSTRIES, LTD.

PROBLEM SUMMARY

Sample Rating Trend



SEDIMENT

Machine Id
E-11
Component
Wind Turbine Gearbox
Fluid
ROYAL PURPLE SYNFILM GT 320 (65 GAL)

COMPONENT CONDITION SUMMARY

No relevant graphs to display

RECOMMENDATION

Replace filter element and resample at later date. In case already attempted and cleanliness was not improved then proceed to replace oil. We were unable to perform a particle count due to a high concentration of particles present in this sample.

PROBLEMATIC TEST RESULTS

Sample Status				**ABNORMAL**	ABNORMAL	ABNORMAL
Silt	scalar	*Visual	NONE	▲ **MODER**	NONE	NONE
Debris	scalar	*Visual	NONE	▲ **MODER**	NONE	LIGHT

Customer Id: MITWHI
Sample No.: MHI022522
Lab Number: 05003279
Test Package: IND 2

To manage this report scan the QR code

To discuss the diagnosis or test data:
Doug Bogart +1 (800)237-1369 x4016
dougb@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.
Alert	---	---	?	We were unable to perform a particle count due to a high concentration of particles present in this sample.

HISTORICAL DIAGNOSIS

05 Feb 2012 Diag: Jonathan Hester

VISUAL METAL

We were unable to perform a particle count due to metal particles present in this sample. Aside from particulates, the condition of the oil is suitable for further service. However, we recommend you service the filters on this component. We recommend an early resample to monitor this condition.Moderate concentration of visible metal present. The iron level is abnormal. PQ index is high. There is no indication of any contamination in the component. The condition of oil is suitable for further service.

view report

12 Jan 2012 Diag: Doug Bogart

ISO

No corrective action is recommended at this time. The filter change at the time of sampling has been noted. Resample at the next service interval to monitor.All component wear rates are normal. There is a high amount of particulates present in the oil. The condition of oil is suitable for further service.

view report

01 Dec 2010 Diag: Jonathan Hester

ISO

No corrective action is recommended at this time. Resample at the next service interval to monitor.All component wear rates are normal. There is a moderate amount of particulates present in the oil. The condition of oil is suitable for further service.

view report

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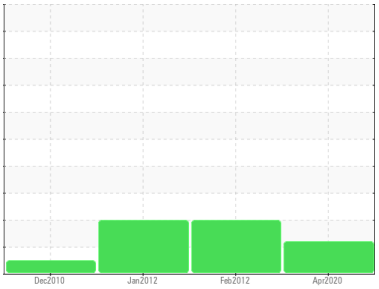
OIL ANALYSIS REPORT

Sample Rating Trend



SEDIMENT

Machine Id
E-11
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. We were unable to perform a particle count due to a high concentration of particles present in this sample.

Wear
All component wear rates are normal.

Contamination
Moderate concentration of visible dirt/debris present in the oil. There is a moderate amount of visible silt present in the sample.

Fluid Condition
The AN level is acceptable for this fluid.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**MHI022522**	RP107449	RP69844
Sample Date		Client Info		**01 Apr 2020**	05 Feb 2012	12 Jan 2012
Machine Age	hrs	Client Info		**0**	60147	60147
Oil Age	hrs	Client Info		**0**	0	0
Oil Changed		Client Info		**N/A**	Not Changd	Not Changd
Sample Status				**ABNORMAL**	ABNORMAL	ABNORMAL

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184	>200	**24**	▲ 103	22.0
Iron	ppm	ASTM D5185m	>200	**9**	▲ 79	35
Chromium	ppm	ASTM D5185m		**<1**	<1	<1
Nickel	ppm	ASTM D5185m		**<1**	<1	0
Titanium	ppm	ASTM D5185m		**0**	0	0
Silver	ppm	ASTM D5185m		**<1**	0	0
Aluminum	ppm	ASTM D5185m		**0**	1	<1
Lead	ppm	ASTM D5185m		**<1**	<1	1
Copper	ppm	ASTM D5185m	>75	**11**	2	2
Tin	ppm	ASTM D5185m		**<1**	0	0
Antimony	ppm	ASTM D5185m		**0**	<1	0
Vanadium	ppm	ASTM D5185m		**0**	0	0
Cadmium	ppm	ASTM D5185m		**0**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**<1**	<1	<1
Barium	ppm	ASTM D5185m		**<1**	2	<1
Molybdenum	ppm	ASTM D5185m		**2**	41	51
Manganese	ppm	ASTM D5185m		**0**	1	<1
Magnesium	ppm	ASTM D5185m	90	**0**	3	5
Calcium	ppm	ASTM D5185m		**1**	10	3
Phosphorus	ppm	ASTM D5185m		**197**	420	415
Zinc	ppm	ASTM D5185m		**4**	109	50
Sulfur	ppm	ASTM D5185m		**2623**	4855	3983

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>+30	**5**	4	8
Sodium	ppm	ASTM D5185m		**1**	<1	<1
Potassium	ppm	ASTM D5185m	>20	**0**	0	0
Water	%	ASTM D6304	>0.1	**0.004**	▲ 0.134	0.003
ppm Water	ppm	ASTM D6304	>1000	**42.3**	▲ 1340	30

FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647		**---**	---	30667
Particles >6µm		ASTM D7647	>5000	**---**	---	▲ 16706
Particles >14µm		ASTM D7647	>640	**---**	---	▲ 2846
Particles >21µm		ASTM D7647	>160	**---**	---	▲ 960
Particles >38µm		ASTM D7647	>40	**---**	---	▲ 148
Particles >71µm		ASTM D7647	>10	**---**	---	▲ 15
Oil Cleanliness		ISO 4406 (c)	>--/19/16	**---**	---	▲ 22/21/19

OIL ANALYSIS REPORT

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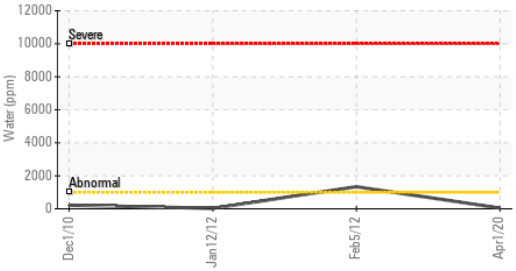
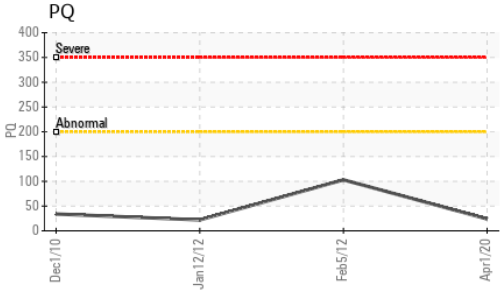
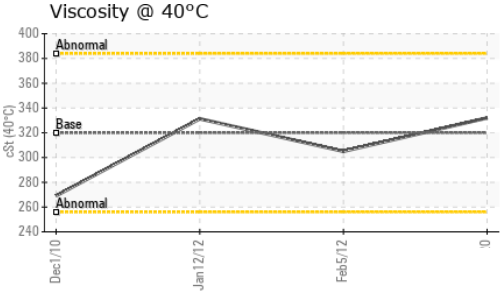
Water (KF)



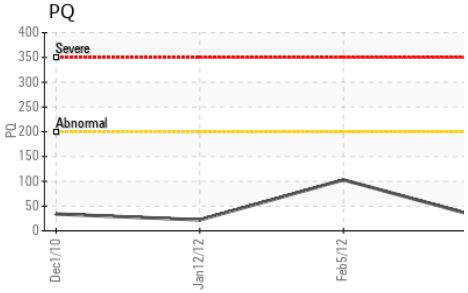
PQ



Viscosity @ 40°C



PQ



FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	0.25	**0.870**	0.778	0.751

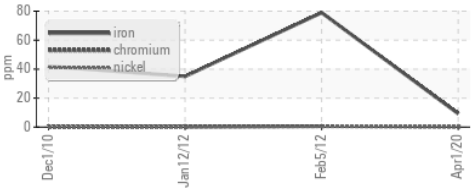
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**LIGHT**	▲ MODER	VLITE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	▲ **MODER**	NONE	NONE
Debris	scalar	*Visual	NONE	▲ **MODER**	NONE	LIGHT
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	320	**332**	305.0	331.3

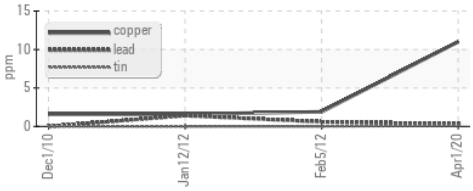
SAMPLE IMAGES	method	limit/base	current	history1	history2
Color				*no image*	*no image*
Bottom				*no image*	*no image*

GRAPHS

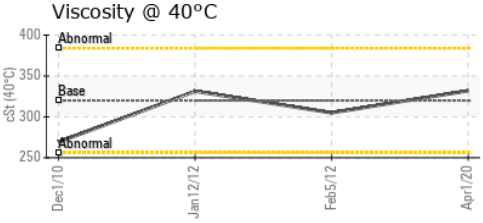
Ferrous Alloys



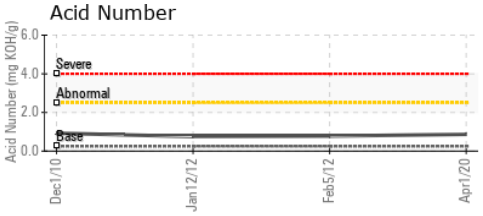
Non-ferrous Metals



Viscosity @ 40°C



Acid Number



ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY
Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : MHI022522 **Received** : 19 Jun 2020
Lab Number : 05003279 **Diagnosed** : 24 Jun 2020
Unique Number : 9073433 **Diagnostician** : Doug Bogart
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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