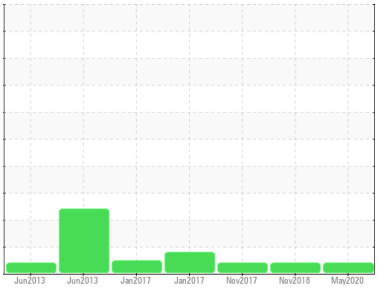
DIAMOND WTG ENGINEERING & SERVICES, INC.
a group company of MITSUBISHI HEAVY INDUSTRIES, LTD.

PROBLEM SUMMARY

Sample Rating Trend



VIS DEBRIS

Machine Id
D002
Component
Wind Turbine Gearbox
Fluid
MITSUBISHI Daphne Alpha Winforce (60 GAL)

COMPONENT CONDITION SUMMARY

No relevant graphs to display

RECOMMENDATION

Re-sample to verify the actual oil condition. Replace filter elements. Change oil if cleanliness level does not improve after replacing the filter(s). 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
Debris	scalar	*Visual	NONE	▲ **MODER**	▲ MODER	LIGHT

Customer Id: MITROS
Sample No.: MHI019234
Lab Number: 05001747
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	---	---	?	Re-sample to verify the actual oil condition. Replace filter elements. Change oil if cleanliness level does not improve after replacing the filter(s).
Resample	---	---	?	Re-sample to verify the actual oil condition. Replace filter elements. Change oil if cleanliness level does not improve after replacing the filter(s).
Alert	---	---	?	We were unable to perform a particle count due to a high concentration of particles present in this sample.

HISTORICAL DIAGNOSIS

26 Nov 2018 Diag: Jonathan Hester

VIS DEBRIS

We recommend you service the filters on this component. Resample at the next service interval to monitor. 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. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report

14 Nov 2017 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 high amount of silt (particulates < 14 microns in size) present in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report

31 Jan 2017 Diag: Don Baldridge

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 high amount of silt (particulates < 14 microns in size) present in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report

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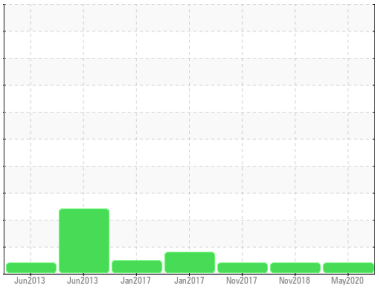
OIL ANALYSIS REPORT

Sample Rating Trend



VIS DEBRIS

Machine Id
D002
Component
Wind Turbine Gearbox
Fluid
MITSUBISHI Daphne Alpha Winforce (60 GAL)

DIAGNOSIS

Recommendation

Re-sample to verify the actual oil condition. Replace filter elements. Change oil if cleanliness level does not improve after replacing the filter(s). 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.

Fluid Condition

The AN level is acceptable for this fluid.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**MHI019234**	MHI023248	MHI011573
Sample Date		Client Info		**29 May 2020**	26 Nov 2018	14 Nov 2017
Machine Age	hrs	Client Info		**0**	87586	79896
Oil Age	hrs	Client Info		**99563**	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	**17**	16	18
Iron	ppm	ASTM D5185m	>200	**21**	14	31
Chromium	ppm	ASTM D5185m		**<1**	0	0
Nickel	ppm	ASTM D5185m		**<1**	<1	<1
Titanium	ppm	ASTM D5185m		**0**	0	0
Silver	ppm	ASTM D5185m		**0**	0	0
Aluminum	ppm	ASTM D5185m		**<1**	<1	0
Lead	ppm	ASTM D5185m		**1**	0	0
Copper	ppm	ASTM D5185m	>75	**10**	6	20
Tin	ppm	ASTM D5185m		**0**	<1	0
Antimony	ppm	ASTM D5185m		**2**	0	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		**0**	0	0
Barium	ppm	ASTM D5185m		**0**	0	0
Molybdenum	ppm	ASTM D5185m		**4**	2	4
Manganese	ppm	ASTM D5185m		**<1**	<1	<1
Magnesium	ppm	ASTM D5185m		**<1**	<1	0
Calcium	ppm	ASTM D5185m		**<1**	<1	0
Phosphorus	ppm	ASTM D5185m		**276**	293	250
Zinc	ppm	ASTM D5185m		**28**	22	48
Sulfur	ppm	ASTM D5185m		**3556**	5138	4050

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>+30	**1**	2	2
Sodium	ppm	ASTM D5185m		**<1**	0	<1
Potassium	ppm	ASTM D5185m	>20	**8**	0	0
Water	%	ASTM D6304	>0.1	**0.009**	0.008	0.006
ppm Water	ppm	ASTM D6304	>1000	**98.2**	80	60

FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647		**---**	---	160635
Particles >6µm		ASTM D7647	>5000	**---**	---	▲ 43624
Particles >14µm		ASTM D7647	>640	**---**	---	426
Particles >21µm		ASTM D7647	>160	**---**	---	77
Particles >38µm		ASTM D7647	>40	**---**	---	6
Particles >71µm		ASTM D7647	>10	**---**	---	1
Oil Cleanliness		ISO 4406 (c)	>--/19/16	**---**	---	▲ 25/23/16

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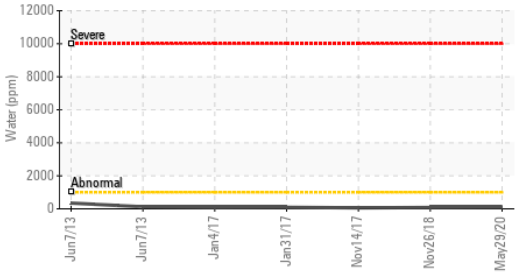
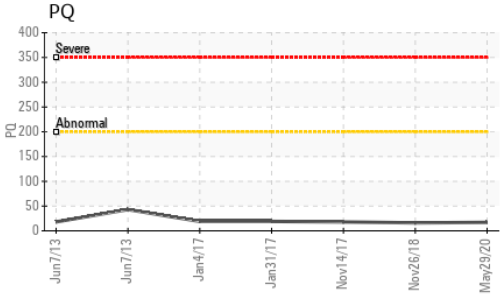
OIL ANALYSIS REPORT

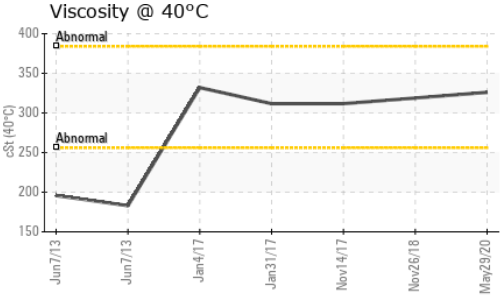
Water (KF)



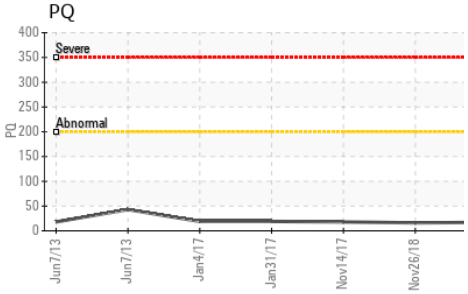
PQ



Viscosity @ 40°C



PQ

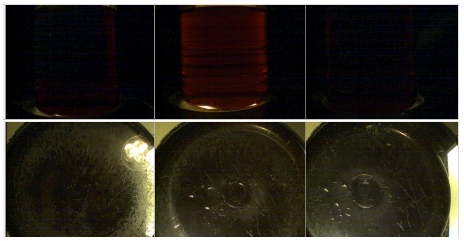


FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		**0.948**	0.964	0.993

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	NONE
Debris	scalar	*Visual	NONE	▲ **MODER**	▲ MODER	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

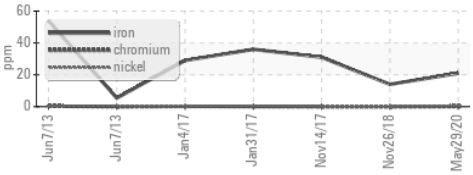
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445		**326**	318.8	311.7

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					

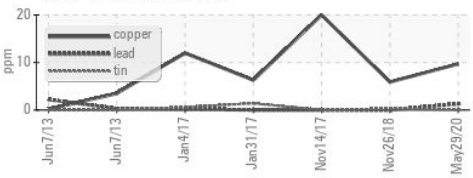


GRAPHS

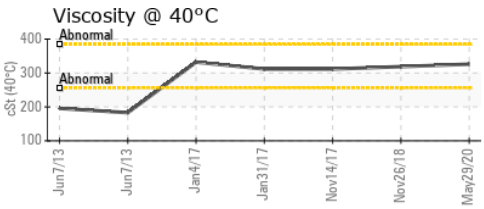
Ferrous Alloys



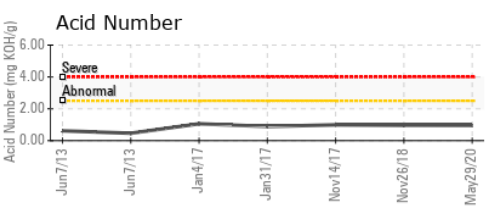
Non-ferrous Metals



Viscosity @ 40°C



Acid Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : MHI019234
Lab Number : 05001747
Unique Number : 9071901
Test Package : IND 2 (Additional Tests: KF, PQ, PrtCount)

Received : 18 Jun 2020
Diagnosed : 19 Jun 2020
Diagnostician : Doug Bogart

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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T: (325)288-4333
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Report Id: MITROS [WUSCAR] 05001747 (Generated: 12/01/2023 00:46:54) Rev: 1

Contact/Location: MATTHEW MILES - MITROS