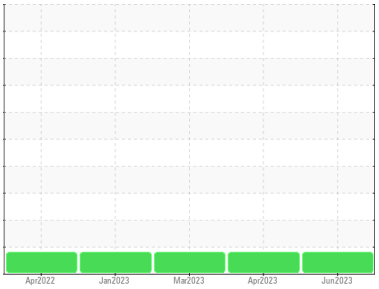
PROBLEM SUMMARY

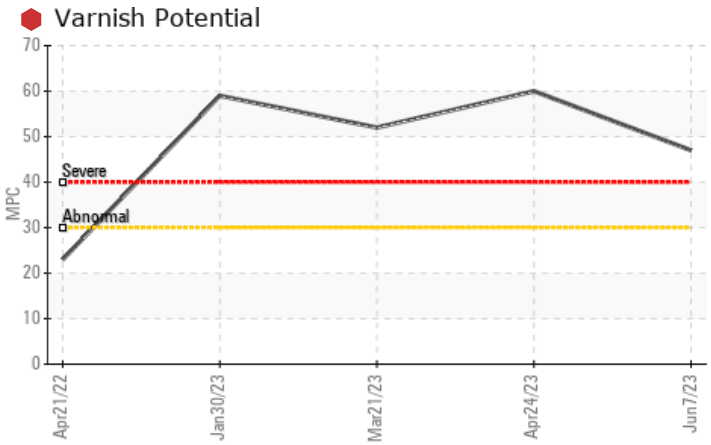
Sample Rating Trend



INSOLUBLES

Machine Id
VILTER CCUP-FGC
Component
Compressor
Fluid
NOT GIVEN (--- GAL)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

We recommend that you use electrostatic or in-depth filtration to remove insolubles from the oil and to reduce the levels of varnish in the system. Alternatively draining a percentage of the oil and topping up with fresh oil (sweetening the oil) may provide a reduction in the varnish potential level. We recommend an early resample to monitor this condition.

PROBLEMATIC TEST RESULTS

Sample Status				**SEVERE**	SEVERE	SEVERE
MPC Varnish Potential	Scale	ASTM D7843	>15	**47**	60	52

Customer Id: NORRALNC
Sample No.: WC0782157
Lab Number: 05866828
Test Package: AOM 1

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
Resample	---	---	?	We recommend an early resample to monitor this condition.
Filter Fluid	---	---	?	We recommend that you use electrostatic filtration to remove insolubles from the oil and to reduce the levels of varnish in the system. Alternatively draining a percentage of the oil and topping up with fresh oil (sweetening the oil) may provide a reduction in the varnish potential level.

HISTORICAL DIAGNOSIS

24 Apr 2023 Diag: Doug Bogart

INSOLUBLES

We recommend that you use electrostatic or in-depth filtration to remove insolubles from the oil and to reduce the levels of varnish in the system. Alternatively draining a percentage of the oil and topping up with fresh oil (sweetening the oil) may provide a reduction in the varnish potential level. We recommend an early resample to monitor this condition.All component wear rates are normal. MPC (Membrane Patch Colorimetry) test indicates a high concentration of varnish present. The water content is negligible. The amount and size of particulates present in the system are acceptable. The AN level is acceptable for this fluid. Linear Sweep Voltammetry (RULER – ASTM D6971) testing indicates normal levels of anti-oxidants present in the oil.

view report

21 Mar 2023 Diag: Doug Bogart

INSOLUBLES

We recommend that you use electrostatic or in-depth filtration to remove insolubles from the oil and to reduce the levels of varnish in the system. Alternatively draining a percentage of the oil and topping up with fresh oil (sweetening the oil) may provide a reduction in the varnish potential level. We recommend an early resample to monitor this condition.All component wear rates are normal. MPC (Membrane Patch Colorimetry) test indicates a high concentration of varnish present. The water content is negligible. The amount and size of particulates present in the system are acceptable. The AN level is acceptable for this fluid. Linear Sweep Voltammetry (RULER – ASTM D6971) testing indicates normal levels of anti-oxidants present in the oil.

view report

30 Jan 2023 Diag: Doug Bogart

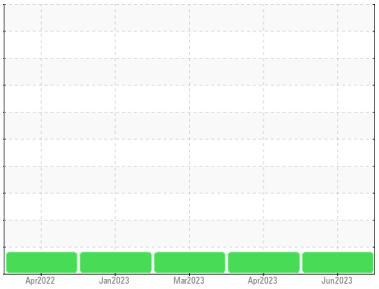
INSOLUBLES

We recommend that you use electrostatic or in-depth filtration to remove insolubles from the oil and to reduce the levels of varnish in the system. Alternatively draining a percentage of the oil and topping up with fresh oil (sweetening the oil) may provide a reduction in the varnish potential level. We recommend an early resample to monitor this condition.All component wear rates are normal. MPC (Membrane Patch Colorimetry) test indicates a high concentration of varnish present. The water content is negligible. The amount and size of particulates present in the system are acceptable. The AN level is acceptable for this fluid. Linear Sweep Voltammetry (RULER – ASTM D6971) testing indicates normal levels of anti-oxidants present in the oil.

view report

OIL ANALYSIS REPORT

Sample Rating Trend



INSOLUBLES

Machine Id
VILTER CCUP-FGC
Component
Compressor
Fluid
NOT GIVEN (--- GAL)

DIAGNOSIS

Recommendation

We recommend that you use electrostatic or in-depth filtration to remove insolubles from the oil and to reduce the levels of varnish in the system. Alternatively draining a percentage of the oil and topping up with fresh oil (sweetening the oil) may provide a reduction in the varnish potential level. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

MPC (Membrane Patch Colorimetry) test indicates a high concentration of varnish present. The water content is negligible. The amount and size of particulates present in the system are acceptable.

Fluid Condition

The AN level is acceptable for this fluid. Linear Sweep Voltammetry (RULER – ASTM D6971) testing indicates normal levels of anti-oxidants present in the oil.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0782157**	WC0782165	WC0782170
Sample Date		Client Info		**07 Jun 2023**	24 Apr 2023	21 Mar 2023
Machine Age	hrs	Client Info		**38444**	38444	0
Oil Age	hrs	Client Info		**22444**	26426	0
Oil Changed		Client Info		**N/A**	N/A	N/A
Sample Status				**SEVERE**	SEVERE	SEVERE

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>50	**0**	0	<1
Chromium	ppm	ASTM D5185m	>5	**0**	0	0
Nickel	ppm	ASTM D5185m		**0**	0	0
Titanium	ppm	ASTM D5185m		**0**	0	0
Silver	ppm	ASTM D5185m		**0**	0	0
Aluminum	ppm	ASTM D5185m	>15	**0**	0	0
Lead	ppm	ASTM D5185m	>65	**0**	0	0
Copper	ppm	ASTM D5185m	>65	**0**	0	0
Tin	ppm	ASTM D5185m	>10	**0**	0	0
Vanadium	ppm	ASTM D5185m		**0**	0	0
Cadmium	ppm	ASTM D5185m		**0**	0	0

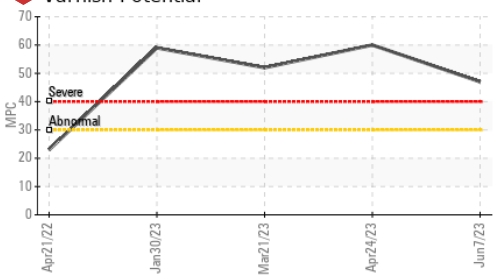
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**0**	0	0
Barium	ppm	ASTM D5185m		**0**	0	0
Molybdenum	ppm	ASTM D5185m		**0**	0	0
Manganese	ppm	ASTM D5185m		**<1**	<1	0
Magnesium	ppm	ASTM D5185m		**<1**	0	0
Calcium	ppm	ASTM D5185m		**0**	0	0
Phosphorus	ppm	ASTM D5185m		**31**	30	39
Zinc	ppm	ASTM D5185m		**0**	0	0
Sulfur	ppm	ASTM D5185m		**281**	260	268

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>35	**0**	0	<1
Sodium	ppm	ASTM D5185m		**<1**	0	0
Potassium	ppm	ASTM D5185m	>20	**<1**	0	0
Water	%	ASTM D6304	>0.1	**0.002**	0.005	0.003
ppm Water	ppm	ASTM D6304	>1000	**16.0**	52.1	29.7

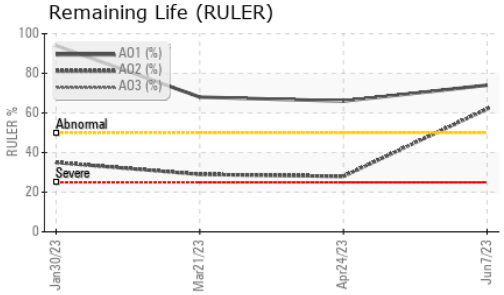
FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>10000	**417**	327	2015
Particles >6µm		ASTM D7647	>2500	**154**	88	532
Particles >14µm		ASTM D7647	>320	**17**	9	42
Particles >21µm		ASTM D7647	>80	**7**	1	14
Particles >38µm		ASTM D7647	>20	**2**	0	3
Particles >71µm		ASTM D7647	>4	**0**	0	0
Oil Cleanliness		ISO 4406 (c)	>20/18/15	**16/14/11**	16/14/10	18/16/13

OIL ANALYSIS REPORT

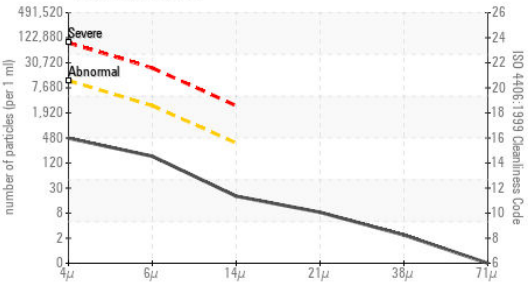
Varnish Potential



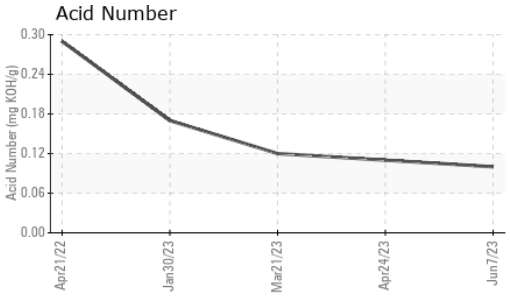
Remaining Life (RULER)



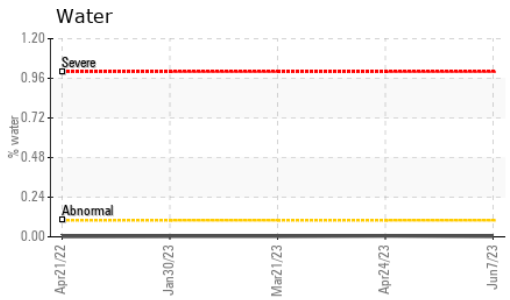
Particle Count



Acid Number



Water

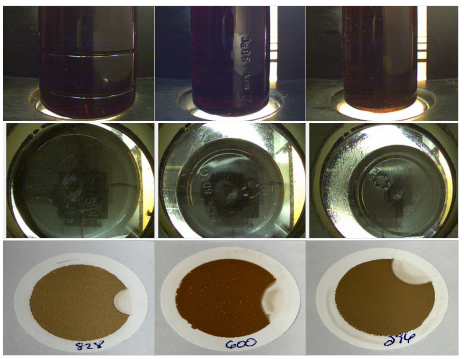


FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		**0.10**	0.11	0.12
Anti-Oxidant 1	%	ASTM D6971	<25	**74**	66	68
Anti-Oxidant 2	%	ASTM D6971	<25	**62**	28	29
MPC Varnish Potential	Scale	ASTM D7843	>15	**47**	60	52

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	>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		**102**	104	101

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					
MPC					



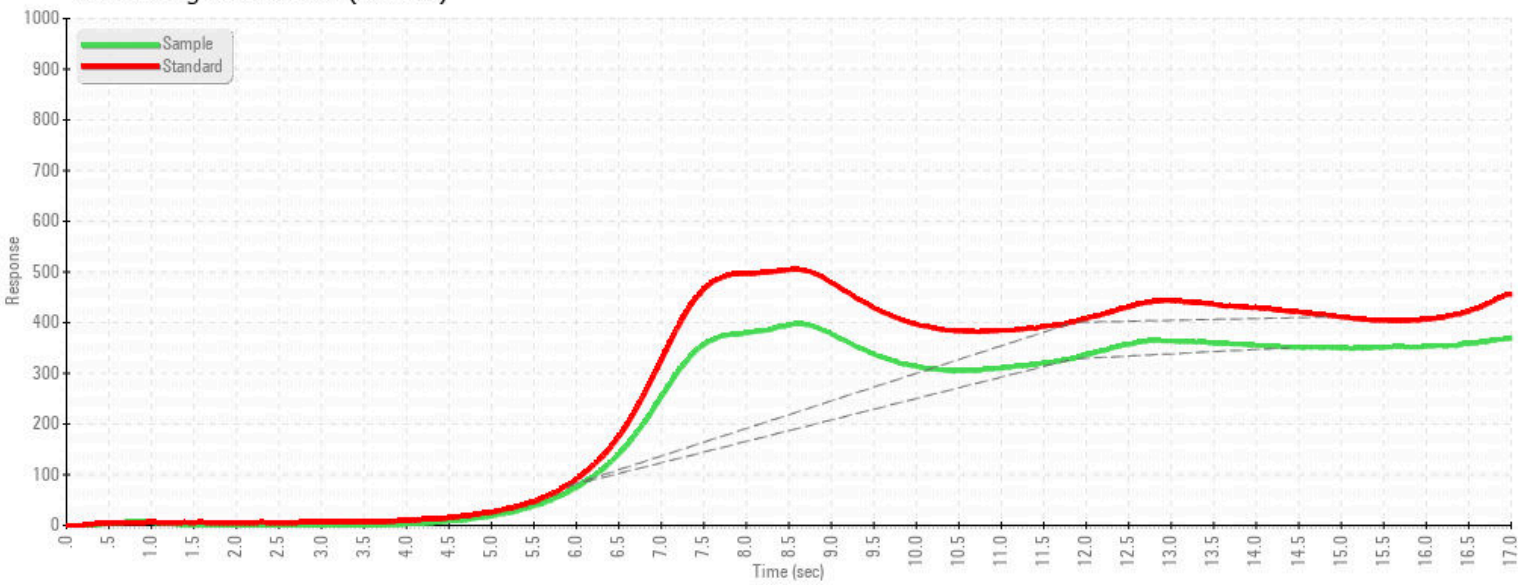
Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0782157 **Received** : 07 Jun 2023
Lab Number : 05866828 **Diagnosed** : 14 Jun 2023
Unique Number : 10506612 **Diagnostician** : Doug Bogart
Test Package : AOM 1 (Additional Tests: KF)

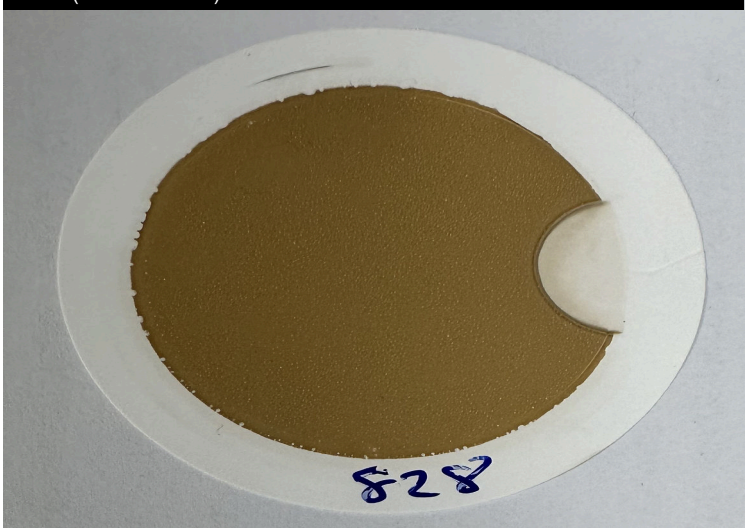
To discuss this sample report, contact Customer Service at 1-800-237-1369.
** - Denotes test methods that are outside of the ISO 17025 scope of accreditation.*
Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

NORTH CAROLINA STATE UNIVERSITY
621 MOTOR POOL DR, FACILITIES DIVISION WAREHOUSE
RALEIGH, NC
US 27607
Contact: PAUL WALKER
apwalke3@ncsu.edu
T: (919)513-3646
F:

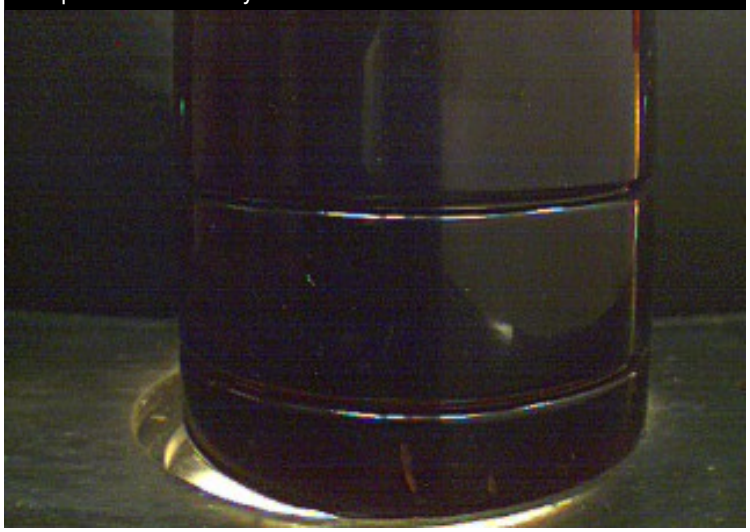
Remaining Useful Life (RULER)



MPC (Varnish Test)



Sample Color & Clarity



This page left intentionally blank