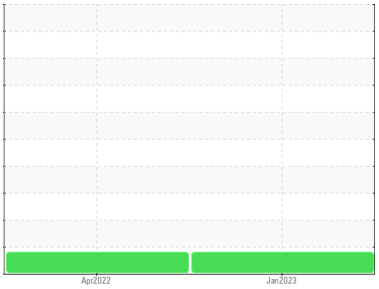
PROBLEM SUMMARY

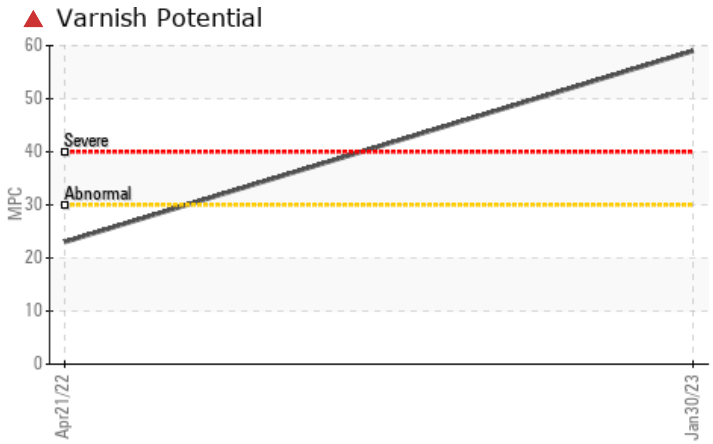
Sample Rating Trend



INSOLUBLES

Machine Id
VILTER CCUP-FGC
Component
Compressor
Fluid
{not provided} (--- 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**	ATTENTION	---
MPC Varnish Potential	Scale	ASTM D7843	>15	▲ **59**	▲ 23	---

Customer Id: NORRALNC
Sample No.: WC0675477
Lab Number: 05757669
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	MISSED	Mar 31 2023	?	We recommend an early resample to monitor this condition.
Filter Fluid	MISSED	Mar 31 2023	?	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

INSOLUBLES

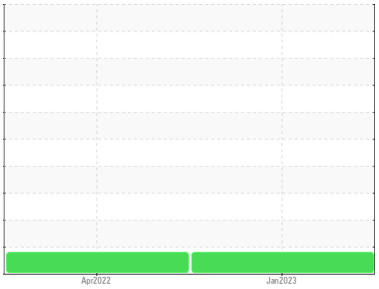
21 Apr 2022 Diag: Doug Bogart

No corrective action is recommended at this time. Please submit a sample of the new (unused) oil to establish a baseline for RULer.All component wear rates are normal. There is a moderate amount of silt (particulates < 14 microns in size) present in the oil. MPC (Membrane Patch Colorimetry) test indicates a moderate concentration of varnish present. The AN level is acceptable for this fluid.

view report

OIL ANALYSIS REPORT

Sample Rating Trend



INSOLUBLES

Machine Id
VILTER CCUP-FGC
Component
Compressor
Fluid
{not provided} (--- 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		**WC0675477**	WC05527555	---
Sample Date		Client Info		**30 Jan 2023**	21 Apr 2022	---
Machine Age	hrs	Client Info		**26426**	26426	---
Oil Age	hrs	Client Info		**26426**	0	---
Oil Changed		Client Info		**N/A**	N/A	---
Sample Status				**SEVERE**	ATTENTION	---

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

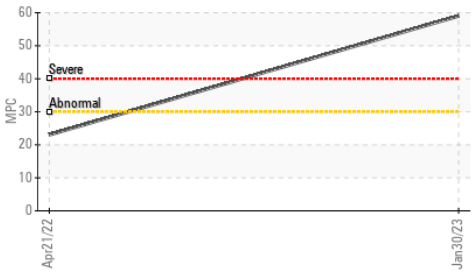
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**0**	<1	---
Barium	ppm	ASTM D5185m		**2**	0	---
Molybdenum	ppm	ASTM D5185m		**0**	0	---
Manganese	ppm	ASTM D5185m		**0**	0	---
Magnesium	ppm	ASTM D5185m		**0**	0	---
Calcium	ppm	ASTM D5185m		**0**	2	---
Phosphorus	ppm	ASTM D5185m		**45**	76	---
Zinc	ppm	ASTM D5185m		**1**	0	---
Sulfur	ppm	ASTM D5185m		**208**	137	---

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>35	**0**	0	---
Sodium	ppm	ASTM D5185m		**0**	0	---
Potassium	ppm	ASTM D5185m	>20	**<1**	0	---
Water	%	ASTM D6304	>0.1	**0.003**	0.002	---
ppm Water	ppm	ASTM D6304	>1000	**29.8**	20.6	---

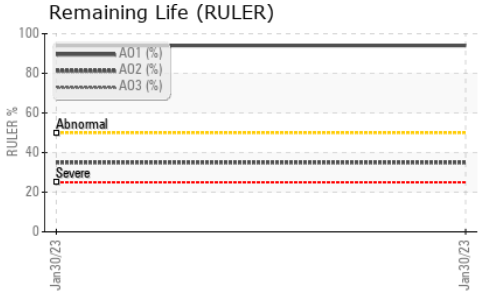
FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>10000	**8156**	9008	---
Particles >6µm		ASTM D7647	>2500	**946**	2506	---
Particles >14µm		ASTM D7647	>320	**85**	230	---
Particles >21µm		ASTM D7647	>80	**27**	80	---
Particles >38µm		ASTM D7647	>20	**1**	4	---
Particles >71µm		ASTM D7647	>4	**0**	0	---
Oil Cleanliness		ISO 4406 (c)	>20/18/15	**20/17/14**	20/19/15	---

OIL ANALYSIS REPORT

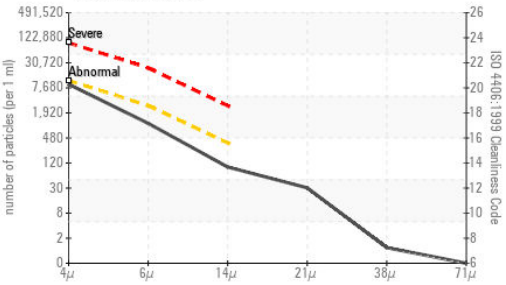
Varnish Potential



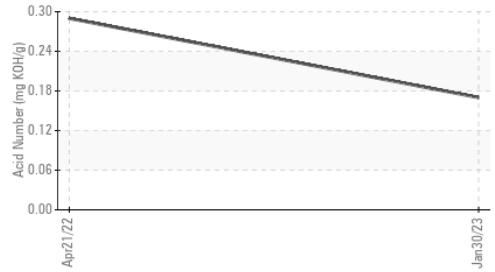
Remaining Life (RULER)



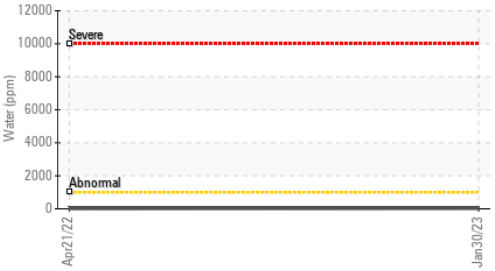
Particle Count



Acid Number



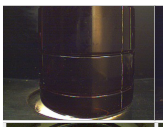
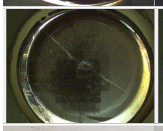
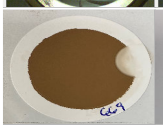
Water (KF)



FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		**0.17**	0.29	---
Anti-Oxidant 1	%	ASTM D6971	<25	**94**	---	---
Anti-Oxidant 2	%	ASTM D6971	<25	**35**	---	---
MPC Varnish Potential	Scale	ASTM D7843	>15	▲ **59**	▲ 23	---

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	**LIGHT**	LIGHT	---
Sand/Dirt	scalar	*Visual	NONE	**NONE**	NONE	---
Appearance	scalar	*Visual	NORML	**NORML**	NORML	---
Odor	scalar	*Visual	NORML	**NORML**	NORML	---
Emulsified Water	scalar	*Visual	>0.1	**NEG**	NEG	---
Free Water	scalar	*Visual		**NEG**	NEG	---

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445		**101**	102.2	---
Visc @ 100°C	cSt	ASTM D445		**---**	11.53	---
Viscosity Index (VI)	Scale	ASTM D2270		**---**	99	---

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

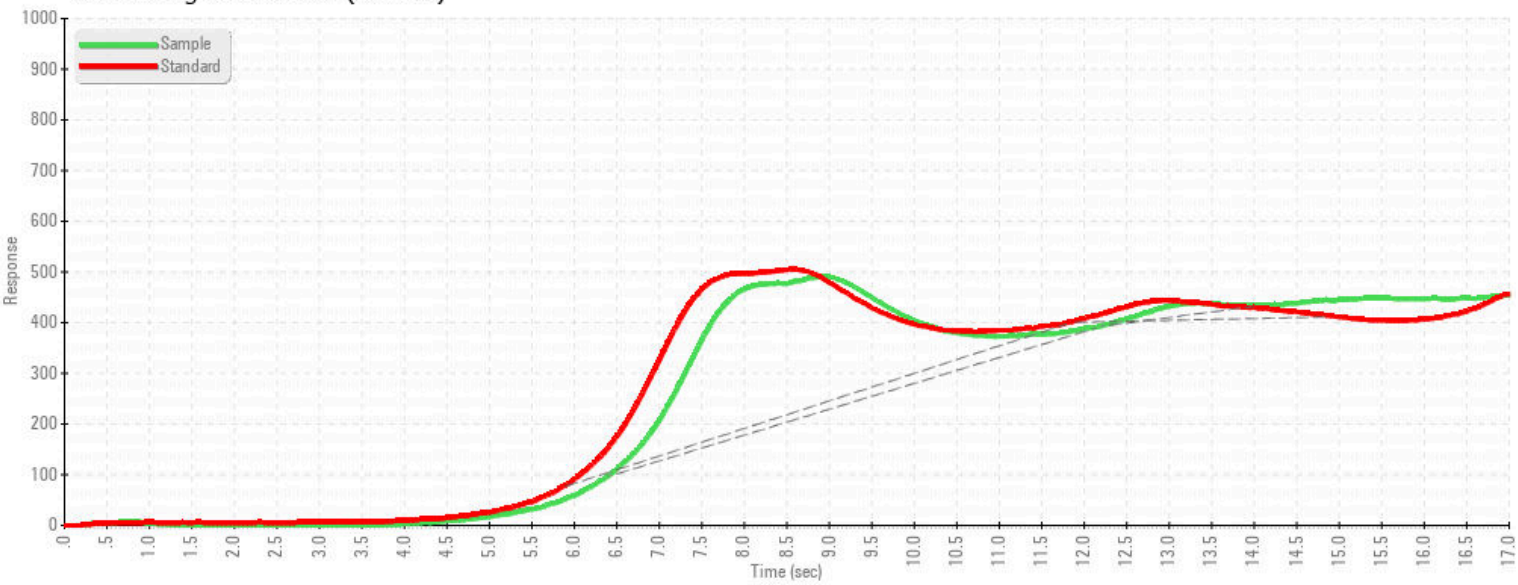
Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0675477 **Received** : 02 Feb 2023
Lab Number : 05757669 **Tested** : 08 Feb 2023
Unique Number : 10322276 **Diagnosed** : 08 Feb 2023 - Doug Bogart
Test Package : AOM 1 (Additional Tests: KF)

Certificate L2367

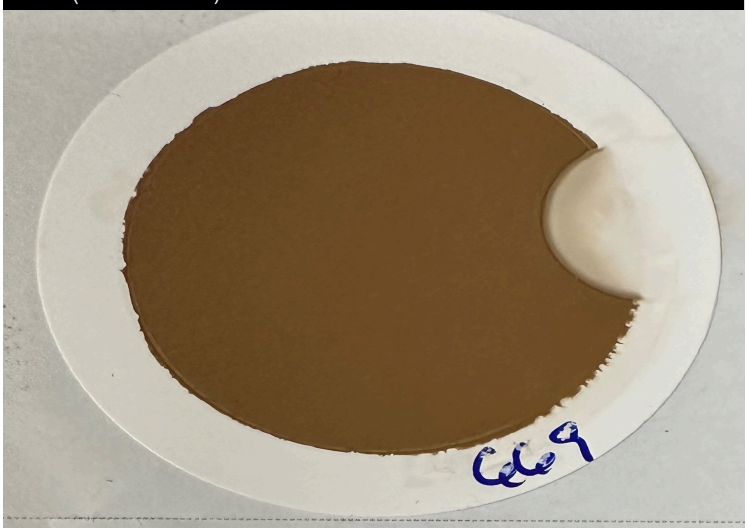
To discuss this sample report, contact Customer Service at 1-800-237-1369.
** - Denotes test methods that are outside of the ISO 17025 scope of accreditation.*
Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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:

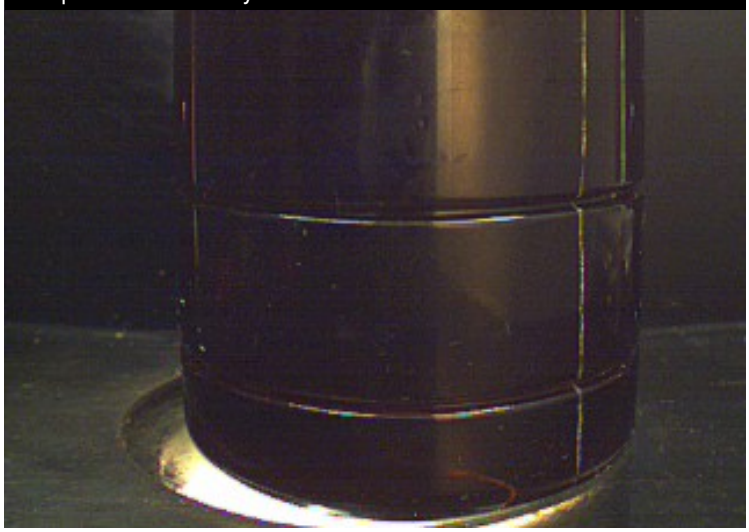
Remaining Useful Life (RULER)



MPC (Varnish Test)



Sample Color & Clarity



This page left intentionally blank