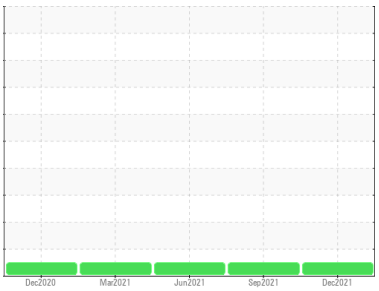
OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL

Machine Id
CCUP STG
Component
Turbine
Fluid
PHILLIPS 66 TURBINE OIL ISO 32 (300 GAL)

DIAGNOSIS

Recommendation
Resample at the next service interval to monitor.

Wear
All component wear rates are normal.

Contamination
MPC (Membrane Patch Colorimetry) test indicates acceptable levels of varnish present. The amount and size of particulates present in the system are acceptable. There is no indication of any contamination in the oil.

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. The condition of the oil is suitable for further service.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0545578**	WC0545577	WC0545579
Sample Date		Client Info		**15 Dec 2021**	03 Sep 2021	02 Jun 2021
Machine Age	hrs	Client Info		**0**	22278	19544
Oil Age	hrs	Client Info		**24109**	0	19544
Oil Changed		Client Info		**N/A**	N/A	Not Changd
Sample Status				**NORMAL**	NORMAL	NORMAL

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>15	**0**	0	0
Chromium	ppm	ASTM D5185m	>4	**0**	0	0
Nickel	ppm	ASTM D5185m	>2	**0**	0	0
Titanium	ppm	ASTM D5185m		**0**	0	0
Silver	ppm	ASTM D5185m		**0**	0	0
Aluminum	ppm	ASTM D5185m	>10	**0**	0	0
Lead	ppm	ASTM D5185m		**<1**	1	<1
Copper	ppm	ASTM D5185m	>5	**<1**	<1	<1
Tin	ppm	ASTM D5185m	>5	**<1**	0	0
Antimony	ppm	ASTM D5185m		**0**	0	0
Vanadium	ppm	ASTM D5185m		**0**	0	1
Cadmium	ppm	ASTM D5185m		**0**	0	0

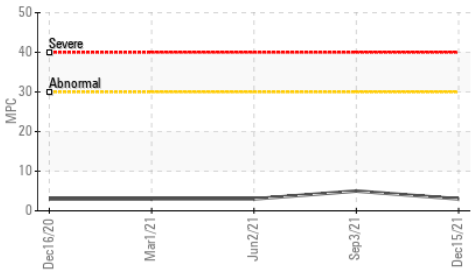
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**0**	<1	2
Barium	ppm	ASTM D5185m		**0**	0	0
Molybdenum	ppm	ASTM D5185m		**0**	0	0
Manganese	ppm	ASTM D5185m		**0**	<1	0
Magnesium	ppm	ASTM D5185m		**0**	0	0
Calcium	ppm	ASTM D5185m		**2**	2	2
Phosphorus	ppm	ASTM D5185m		**88**	80	78
Zinc	ppm	ASTM D5185m		**4**	0	8
Sulfur	ppm	ASTM D5185m		**50**	149	42

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>15	**<1**	0	<1
Sodium	ppm	ASTM D5185m		**4**	<1	2
Potassium	ppm	ASTM D5185m	>20	**0**	0	0
Water	%	ASTM D6304	>0.03	**0.009**	0.002	0.003
ppm Water	ppm	ASTM D6304	>300	**98.5**	16.8	35.5

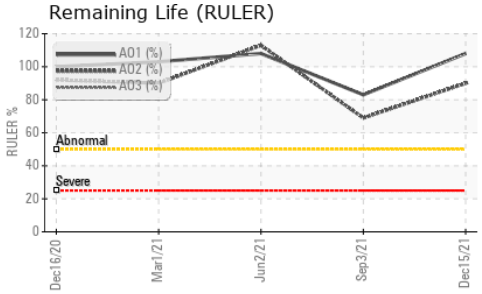
FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>2500	**1014**	486	947
Particles >6µm	ASTM D7647	>640	**338**	73	229
Particles >14µm	ASTM D7647	>80	**53**	5	22
Particles >21µm	ASTM D7647	>20	**13**	2	8
Particles >38µm	ASTM D7647	>4	**2**	0	1
Particles >71µm	ASTM D7647	>3	**0**	0	0
Oil Cleanliness	ISO 4406 (c)	>18/16/13	**17/16/13**	16/13/10	17/15/12

OIL ANALYSIS REPORT

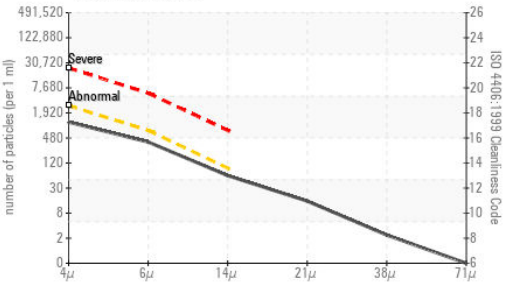
Varnish Potential



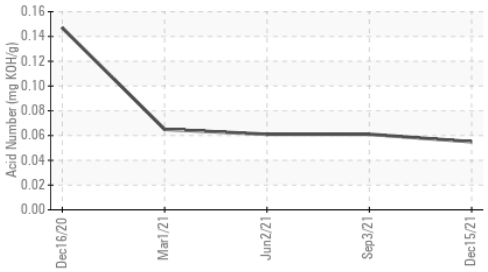
Remaining Life (RULER)



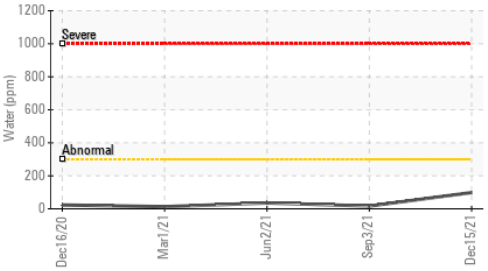
Particle Count



Acid Number



Water (KF)



FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		**0.055**	0.061	0.061
Anti-Oxidant 1	%	ASTM D6971	<25	**108**	83	108
Anti-Oxidant 2	%	ASTM D6971	<25	**90**	69	113
MPC Varnish Potential	Scale	ASTM D7843	>15	**3**	5	3

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	**LIGHT**	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	>0.03	**NEG**	NEG	NEG
Free Water	scalar	*Visual		**NEG**	NEG	NEG

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445		**31.8**	31.7	31.6
Visc @ 100°C	cSt	ASTM D445		**5.87**	---	5.87
Viscosity Index (VI)	Scale	ASTM D2270		**130**	---	131

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

Certificate L2367

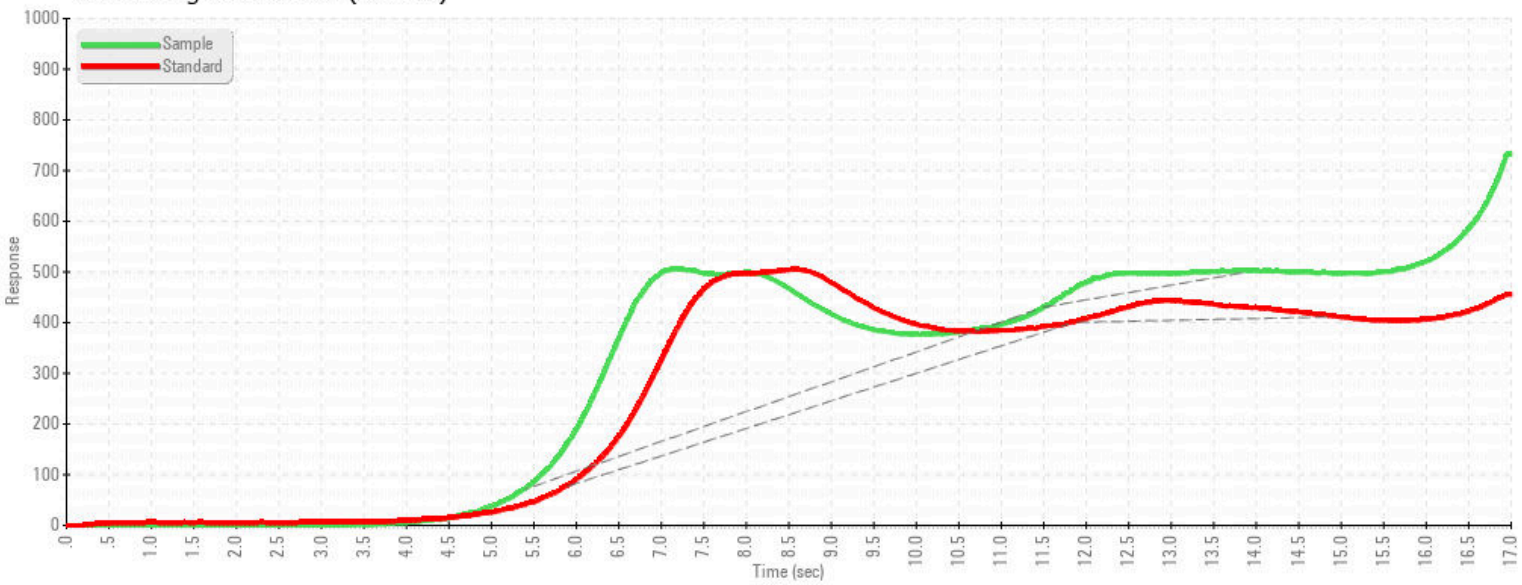
Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0545578
Lab Number : 05424614
Unique Number : 9778805
Test Package : AOM 1 (Additional Tests: KF)

Received : 16 Dec 2021
Tested : 28 Dec 2021
Diagnosed : 28 Dec 2021 - Doug Bogart

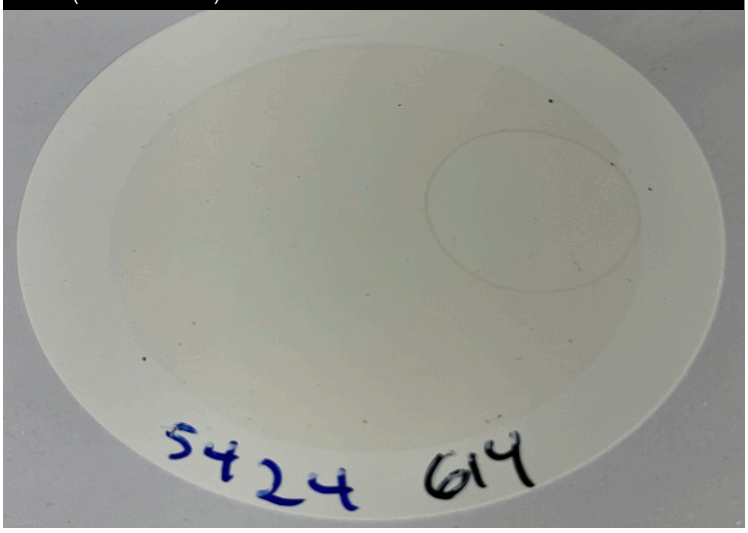
To discuss this sample report, contact Customer Service at 1-800-237-1369.
** - Denotes test methods that are outside of the ISO 17025 scope of accreditation.*
Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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