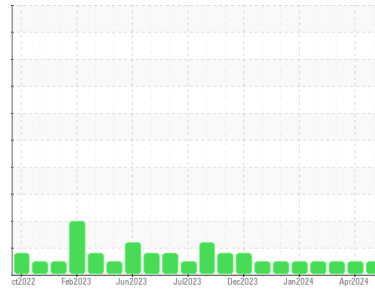




# OIL ANALYSIS REPORT

Sample Rating Trend



**NORMAL**



Area

**Paper Side**

Machine Id

**PM 2 MAIN BOWSER**

Component

**Bearing Lube**

Fluid

**SHELL PM S2 M 220 (3500 GAL)**

## DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor.

### Wear

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the oil. The amount and size of particulates present in the system are acceptable.

### Fluid Condition

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

## SAMPLE INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	<b>PE0001497</b>	PE0001493	PE0001599
Sample Date	Client Info	<b>16 May 2024</b>	16 Apr 2024	26 Mar 2024
Machine Age	hrs	Client Info	<b>0</b>	0
Oil Age	hrs	Client Info	<b>0</b>	0
Oil Changed	Client Info	<b>N/A</b>	N/A	N/A
Sample Status		<b>NORMAL</b>	NORMAL	NORMAL

## CONTAMINATION

method	limit/base	current	history1	history2
Water	WC Method >0.2	<b>NEG</b>	NEG	NEG

## WEAR METALS

method	limit/base	current	history1	history2
PQ	ASTM D8184	<b>10</b>	16	11
Iron	ppm	ASTM D5185m >120	<b>0</b>	0
Chromium	ppm	ASTM D5185m >5	<b>0</b>	0
Nickel	ppm	ASTM D5185m >20	<b>0</b>	0
Titanium	ppm	ASTM D5185m	<b>0</b>	<1
Silver	ppm	ASTM D5185m	<b>0</b>	0
Aluminum	ppm	ASTM D5185m >4	<b>0</b>	0
Lead	ppm	ASTM D5185m >30	<b>0</b>	0
Copper	ppm	ASTM D5185m >17	<b>3</b>	3
Tin	ppm	ASTM D5185m >10	<b>&lt;1</b>	0
Vanadium	ppm	ASTM D5185m	<b>0</b>	<1
Cadmium	ppm	ASTM D5185m	<b>0</b>	0

## ADDITIVES

method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	<b>0</b>	0
Barium	ppm	ASTM D5185m	<b>0</b>	0
Molybdenum	ppm	ASTM D5185m	<b>0</b>	0
Manganese	ppm	ASTM D5185m	<b>&lt;1</b>	0
Magnesium	ppm	ASTM D5185m	<b>2</b>	<1
Calcium	ppm	ASTM D5185m	<b>133</b>	118
Phosphorus	ppm	ASTM D5185m	<b>891</b>	802
Zinc	ppm	ASTM D5185m	<b>1180</b>	1139
Sulfur	ppm	ASTM D5185m	<b>7309</b>	7014

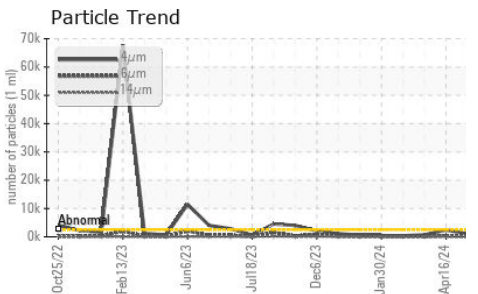
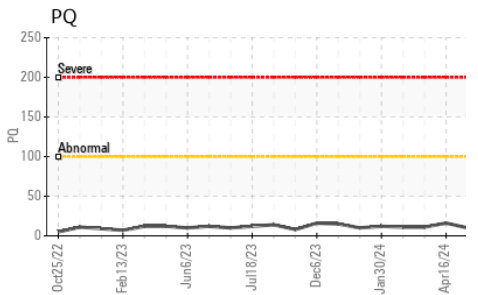
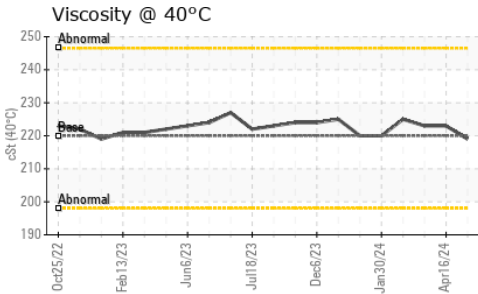
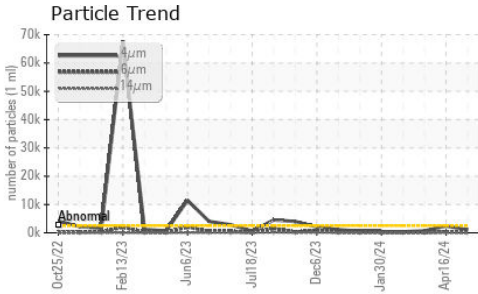
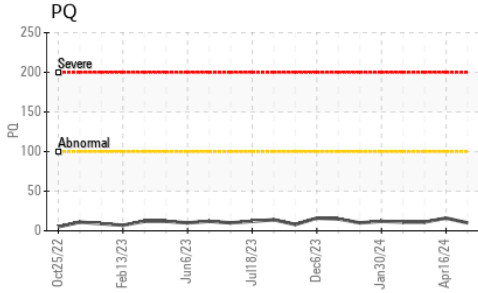
## CONTAMINANTS

method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >25	<b>3</b>	3
Sodium	ppm	ASTM D5185m	<b>3</b>	5
Potassium	ppm	ASTM D5185m >20	<b>0</b>	0

## FLUID CLEANLINESS

method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647 >2500	<b>1095</b>	2399	719
Particles >6µm	ASTM D7647 >640	<b>259</b>	419	107
Particles >14µm	ASTM D7647 >160	<b>15</b>	19	10
Particles >21µm	ASTM D7647 >40	<b>2</b>	5	2
Particles >38µm	ASTM D7647 >10	<b>0</b>	0	0
Particles >71µm	ASTM D7647 >3	<b>0</b>	0	0
Oil Cleanliness	ISO 4406 (c) >18/16/14	<b>17/15/11</b>	18/16/11	17/14/10

# OIL ANALYSIS REPORT

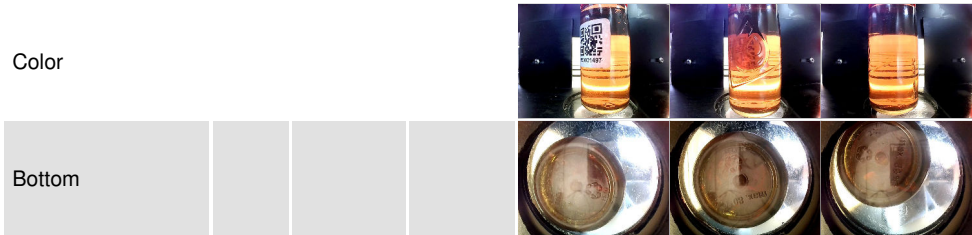


FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		<b>0.12</b>	0.97	0.69

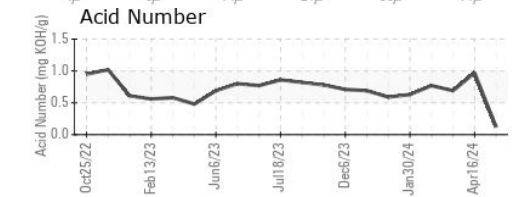
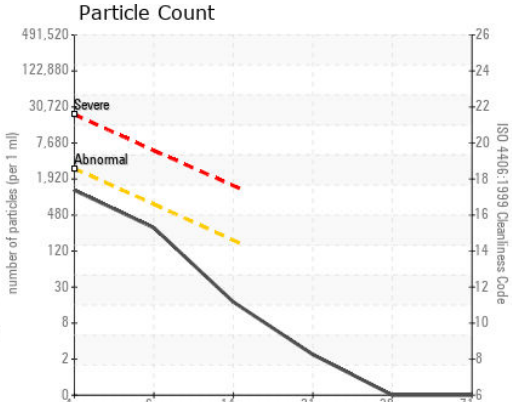
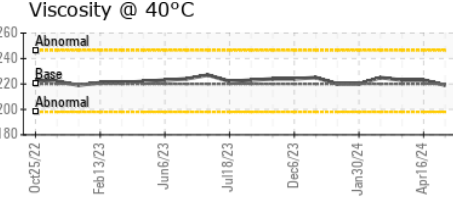
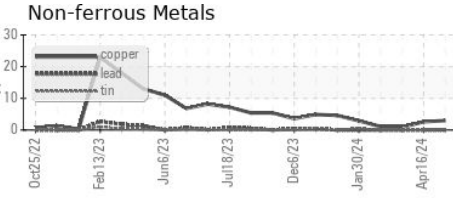
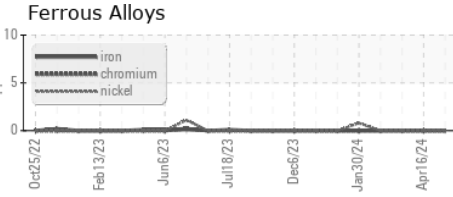
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Precipitate	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Silt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Debris	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Appearance	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Odor	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	<b>NEG</b>	NEG	NEG
Free Water	scalar	*Visual		<b>NEG</b>	NEG	NEG

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	220	<b>219</b>	223	223

SAMPLE IMAGES		method	limit/base	current	history1	history2
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## GRAPHS



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : PE0001497 **Received** : 20 May 2024  
**Lab Number** : **06184900** **Tested** : 22 May 2024  
**Unique Number** : 11036226 **Diagnosed** : 22 May 2024 - Don Baldrige  
**Test Package** : PLANT ( Additional Tests: ICP, KV40, PQ, PrtCount, SCREEN )

**MCKINLEY PAPER COMPANY**  
 1902 MARINE DR  
 PORT ANGELES, WA  
 US 98363  
 Contact: JOSHUA HALL  
 joshua.hall@biopappel.com  
 T: (360)457-4474  
 F:

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)