

## **OIL ANALYSIS REPORT**

Sample Rating Trend



### Area Paper Side PM 1 Turbo Shaker Bowser

Component Bearing Lube Fluid SHELL PM S2 M 220 (--- 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.

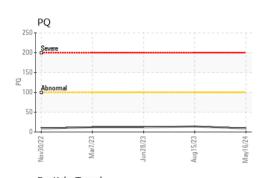
#### Fluid Condition

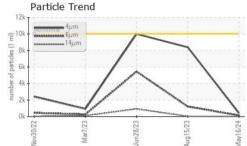
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

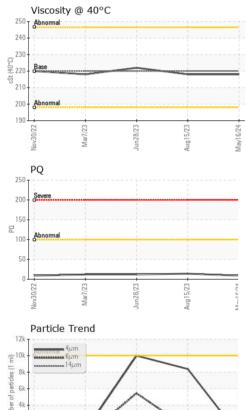
Machine Age     hrs     Client Info     0     0     0     0       Oil Age     hrs     Client Info     N/A     N/A     N/A       Sample Status     Imit/base     NORMAL     NORMAL     ABNORMAL       CONTAMINATION     method     Imit/base     current     history1     history2       Water     WC Method     >0.2     NEG     NEG     NEG       WEAR METALS     method     imit/base     current     history1     history2       PQ     ASTM 05185n     >120     0     4     <1     2       ron     ppm     ASTM 05185n     >5     0     0     0       Nickel     ppm     ASTM 05185n     >5     0     0     0       Silver     ppm     ASTM 05185n     >4     0     <1     <1       Lead     ppm     ASTM 05185n     >10     <1     0     0       Copper     pm     ASTM 05185n     >10     <1     0     0       Copper	SAMPLE INFORMA	ATION	method	limit/base	current	history1	history2
Sample Date     Client Info     16 May 2024     15 Aug 2023     28 Jun 2023       Machine Age     hrs     Client Info     0     0     0       Dil Age     hrs     Client Info     0     0     0       Sample Status     Client Info     N/A     N/A     N/A     N/A       Sample Status     Client Info     N/A     N/A     N/A     N/A       CONTAMINATION     method     Imit/base     current     history1     history2       Water     WC Method     >0.2     NEG     NEG     NEG       WEAR METALS     method     Imit/base     current     history1     history2       PQ     ASTM D5185m     >120     0     4     <1	Sample Number		Client Info		PE0001543	PE0000967	PE0000985
Machine Age     hrs     Client Info     0     0     0       Dil Age     hrs     Client Info     N/A     N/A     N/A       Sample Status     Image     N/A     NORMAL     ABNORMAL       CONTAMINATION     method     Imit/base     current     history1     history2       Water     WC Method     >0.2     NEG     NEG     NEG       Wetar     WC Method     >0.2     NEG     NEG     NEG       VEAR METALS     method     Imit/base     current     history1     history2       PQ     ASTM D5185m     >120     0     4     -1     12       from     ppm     ASTM D5185m     >20     0     0     0       Silver     ppm     ASTM D5185m     >30     0     0     0       Copper     ppm     ASTM D5185m     >10     -1     0     0       Cadmium     ppm     ASTM D5185m     >10     -1     0     0       Cadmium     ppm     ASTM D			Client Info		16 May 2024	15 Aug 2023	28 Jun 2023
Dil Age     hrs     Client Info     0     0     0     0       Dil Changed     Client Info     N/A     N/A     N/A     N/A       Sample Status     Imit/base     current     history1     history2       Water     WC Method     >0.2     NEG     NEG     NEG       WEAR METALS     method     limit/base     current     history2     history2       PQ     ASTM D5165     >120     0     4     -1       Chromium     ppm     ASTM D5165     >20     0     0     0       Nickel     ppm     ASTM D5165     >20     0     0     0     0       Silver     ppm     ASTM D5165     >30     <		hrs			-	-	
Dil Changed     Client Info     N/A     N/A     N/A     N/A       Sample Status     Imit/base     current     NoRMAL     ABNORMAL       CONTAMINATION     method     imit/base     current     history1     history1       Water     WC Method     >0.2     NEG     NEG     NEG       WEAR METALS     method     imit/base     current     history1     history2       PQ     ASTM D8184     9     14     12     fill     fill       Kickel     ppm     ASTM D5185n     >120     0     0     0       Kickel     ppm     ASTM D5185n     >20     0     0     0       Silver     ppm     ASTM D5185n     >30     0     0     0       Copper     pm     ASTM D5185n     >10     <1	U	hrs	Client Info		0	0	0
Sample Status     NORMAL     NORMAL     ABNORMAL       CONTAMINATION     method     limit/base     current     history1     history2       Water     WC Method     >0.2     NEG     NEG     NEG       Wear METALS     method     limit/base     current     history1     history2       PQ     ASTM D8184     9     14     12       Iron     ppm     ASTM D5185n     >5     0     0     0       Nickel     ppm     ASTM D5185n     >5     0     0     0     0       Silver     ppm     ASTM D5185n     >5     0     0     0     0       Copper     ppm     ASTM D5185n     >30     0     0     0     0       Adaminum     ppm     ASTM D5185n     >10     <1	-					N/A	
Water     WC Method     >0.2     NEG     NEG     NEG       WEAR METALS     method     limit/base     current     history1     history2       PQ     ASTM D8184     9     14     12       Iron     ppm     ASTM D8185     >120     0     4     <1	Sample Status				NORMAL	NORMAL	ABNORMAL
WEAR METALS     method     limit/base     current     history1     history2       PQ     ASTM D8184     9     14     12       iron     ppm     ASTM D8185     >5     0     0     4       Chromium     ppm     ASTM D5185     >5     0     0     0       Nickel     ppm     ASTM D5185     >20     0     0     0       Silver     ppm     ASTM D5185     >20     0     0     0       Silver     ppm     ASTM D5185     >4     0     <1	CONTAMINATION		method	limit/base	current	history1	history2
PQ     ASTM D8184     9     14     12       tron     ppm     ASTM D5185m     >120     0     4     <1       Chromium     ppm     ASTM D5185m     >5     0     0     0       Nickel     ppm     ASTM D5185m     >20     0     0     0       Silver     ppm     ASTM D5185m     >20     0     0     0       Auminum     ppm     ASTM D5185m     >4     0     <1     <1       Lead     ppm     ASTM D5185m     >30     0     0     0     0       Copper     ppm     ASTM D5185m     >10     <1     0     0     0       Cadmium     ppm     ASTM D5185m     0     0     0     0     0       Boron     ppm     ASTM D5185m     0     0     0     0     0       Magaeese     ppm     ASTM D5185m     0     <1     0     0       Magaeesium     ppm     ASTM D5185m     535     535	Water		WC Method	>0.2	NEG	NEG	NEG
Iron     ppm     ASTM D5185m     >120     0     4     <1       Chromium     ppm     ASTM D5185m     >5     0     0     0       Nickel     ppm     ASTM D5185m     >20     0     0     0       Silver     ppm     ASTM D5185m     0     0     0     0       Aluminum     ppm     ASTM D5185m     >30     0     0     0     0       Lead     ppm     ASTM D5185m     >30     0     0     0     0       Copper     ppm     ASTM D5185m     >10     <1	WEAR METALS		method	limit/base	current	history1	history2
Chromium     ppm     ASTM D5185m     >5     0     0     0       Nickel     ppm     ASTM D5185m     >20     0     0     0       Titanium     ppm     ASTM D5185m     0     0     0     0       Silver     ppm     ASTM D5185m     >4     0     -1     -1       Lead     ppm     ASTM D5185m     >30     0     0     0       Copper     ppm     ASTM D5185m     >17     12     1     <1	PQ		ASTM D8184		9	14	12
Nickel     ppm     ASTM D5185m     >20     0     0     0       Titanium     ppm     ASTM D5185m     0     0     0     0       Silver     ppm     ASTM D5185m     >4     0     <1	Iron	ppm	ASTM D5185m	>120	0	4	<1
Titanium     ppm     ASTM D5185m     0     0     0     0       Silver     ppm     ASTM D5185m     >4     0     <1	Chromium	ppm	ASTM D5185m	>5	0	0	0
Silver     ppm     ASTM D5185m     0     0     0     0       Aluminum     ppm     ASTM D5185m     >4     0     <1	Nickel	ppm	ASTM D5185m	>20	0	0	0
Aluminum   ppm   ASTM D5185m   >4   0   <1	Titanium	ppm	ASTM D5185m		0	0	0
Lead     ppm     ASTM D5185m     >30     0     0     0       Copper     ppm     ASTM D5185m     >17     12     1     <1	Silver	ppm	ASTM D5185m		0	0	0
Copper     ppm     ASTM D5185m     >17     12     1     <1       Tin     ppm     ASTM D5185m     >10     <1	Aluminum	ppm	ASTM D5185m	>4	0	<1	<1
Copper     ppm     ASTM D5185m     >17     12     1     <1       Tin     ppm     ASTM D5185m     >10     <1	Lead	ppm	ASTM D5185m	>30	0	0	0
Vanadium     ppm     ASTM D5185m     0     0     <1       Cadmium     ppm     ASTM D5185m     0     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     0     0     0       Barium     ppm     ASTM D5185m     0     0     0     0       Barium     ppm     ASTM D5185m     0     <1     0     0       Manganese     ppm     ASTM D5185m     0     <1     0     0       Magnesium     ppm     ASTM D5185m     3     2     2     2       Calcium     ppm     ASTM D5185m     3     2     2     2       Calcium     ppm     ASTM D5185m     655     535     482       Zinc     ppm     ASTM D5185m     872     780     680       Sulfur     ppm     ASTM D5185m     20     1     1     1     1       Sod	Copper	ppm	ASTM D5185m	>17	12	1	<1
Cadmium     ppm     ASTM D5185m     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     0     0     0       Barium     ppm     ASTM D5185m     0     0     0     0       Barium     ppm     ASTM D5185m     0     <1     0     0       Manganese     ppm     ASTM D5185m     0     <1     0     0       Magnesium     ppm     ASTM D5185m     3     2     2     2       Calcium     ppm     ASTM D5185m     3     2     2     2       Calcium     ppm     ASTM D5185m     3     2     2     2       Calcium     ppm     ASTM D5185m     655     535     482       Zinc     ppm     ASTM D5185m     >25     2     2     3       Solitorn     ppm     ASTM D5185m     >20     <1     <1     <1       Pot	Tin	ppm	ASTM D5185m	>10	<1	0	0
ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     0     0     0       Barium     ppm     ASTM D5185m     0     0     0     0       Manganese     ppm     ASTM D5185m     0     <1	Vanadium	ppm	ASTM D5185m		0	0	<1
Boron     ppm     ASTM D5185m     0     0     0     0       Barium     ppm     ASTM D5185m     0     0     0     0       Molybdenum     ppm     ASTM D5185m     0     <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium     ppm     ASTM D5185m     0     0     0       Molybdenum     ppm     ASTM D5185m     0     <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum     ppm     ASTM D5185m     0     <1     0       Manganese     ppm     ASTM D5185m     <1	Boron	ppm	ASTM D5185m		0	0	0
Manganese   ppm   ASTM D5185m   <1   0   0     Magnesium   ppm   ASTM D5185m   3   2   2     Calcium   ppm   ASTM D5185m   70   62   44     Phosphorus   ppm   ASTM D5185m   655   535   482     Zinc   ppm   ASTM D5185m   655   535   482     Zinc   ppm   ASTM D5185m   6193   4997   5200     CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >25   2   2   3     Sodium   ppm   ASTM D5185m   >20   <1   <1   <1     Potassium   ppm   ASTM D5185m   >20   <1   <1   <1   <1     FLUID CLEANLINESS   method   limit/base   current   history1   history2     Particles >4µm   ASTM D7647   >10000   412   8391   10005     Particles >6µm   ASTM D7647   >2500   141   1217   5450     Parti	Barium	ppm	ASTM D5185m		0	0	0
Magnesium   ppm   ASTM D5185m   3   2   2     Calcium   ppm   ASTM D5185m   70   62   44     Phosphorus   ppm   ASTM D5185m   655   535   482     Zinc   ppm   ASTM D5185m   655   535   482     Zinc   ppm   ASTM D5185m   872   780   680     Sulfur   ppm   ASTM D5185m   6193   4997   5200     CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >25   2   2   3     Sodium   ppm   ASTM D5185m   >20   <1   <1   <1     Potassium   ppm   ASTM D5185m   >20   <1   <1   <1   <1     FLUID CLEANLINESS   method   limit/base   current   history1   history2     Particles >4µm   ASTM D7647   >10000   412   8391   10005     Particles >6µm   ASTM D7647   >2500   141   1217   5450     Part	Molybdenum	ppm	ASTM D5185m		0	<1	0
Calcium   ppm   ASTM D5185m   70   62   44     Phosphorus   ppm   ASTM D5185m   655   535   482     Zinc   ppm   ASTM D5185m   672   780   680     Sulfur   ppm   ASTM D5185m   6193   4997   5200     CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >25   2   2   3     Sodium   ppm   ASTM D5185m   >20   <1	Manganese	ppm	ASTM D5185m		<1	0	0
Phosphorus     ppm     ASTM D5185m     655     535     482       Zinc     ppm     ASTM D5185m     872     780     680       Sulfur     ppm     ASTM D5185m     6193     4997     5200       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     2     2     3       Sodium     ppm     ASTM D5185m     >25     2     2     3       Sodium     ppm     ASTM D5185m     >20     <1	Magnesium	ppm	ASTM D5185m		3	2	2
Zinc     ppm     ASTM D5185m     872     780     680       Sulfur     ppm     ASTM D5185m     6193     4997     5200       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     2     2     3       Sodium     ppm     ASTM D5185m     >25     2     2     3       Sodium     ppm     ASTM D5185m     >20     <1	Calcium	ppm	ASTM D5185m		70	62	44
Sulfur     ppm     ASTM D5185m     6193     4997     5200       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     2     2     3       Sodium     ppm     ASTM D5185m     >25     2     2     3       Sodium     ppm     ASTM D5185m     >20     <1     <1     <1       Potassium     ppm     ASTM D5185m     >20     <1     <1     <1     <1       FLUID CLEANLINESS     method     limit/base     current     history1     history2       Particles >4µm     ASTM D7647     >10000     412     8391     10005       Particles >6µm     ASTM D7647     >2500     141     1217     5450       Particles >14µm     ASTM D7647     >160     11     24     928       Particles >21µm     ASTM D7647     >40     3     9     312       Particles >38µm     ASTM D7647     >10     0     0     48	Phosphorus	ppm	ASTM D5185m		655	535	482
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m<>25223SodiumppmASTM D5185m>25223PotassiumppmASTM D5185m>20<1	Zinc	ppm	ASTM D5185m		872	780	680
Silicon     ppm     ASTM D5185m     >25     2     2     3       Sodium     ppm     ASTM D5185m     4     <1	Sulfur	ppm	ASTM D5185m		6193	4997	5200
Sodium     ppm     ASTM D5185m     4     <1	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium     ppm     ASTM D5185m     >20     <1     <1     <1       FLUID CLEANLINESS     method     limit/base     current     history1     history2       Particles >4µm     ASTM D7647     >10000     412     8391     10005       Particles >6µm     ASTM D7647     >2500     141     1217     5450       Particles >14µm     ASTM D7647     >160     11     24     928       Particles >14µm     ASTM D7647     >40     3     9     312       Particles >21µm     ASTM D7647     >10     0     0     48       Particles >38µm     ASTM D7647     >3     0     0     48	Silicon	ppm	ASTM D5185m	>25	2	2	3
FLUID CLEANLINESS   method   limit/base   current   history1   history2     Particles >4μm   ASTM D7647   >10000   412   8391   10005     Particles >6μm   ASTM D7647   >2500   141   1217   5450     Particles >14μm   ASTM D7647   >160   11   24   928     Particles >21μm   ASTM D7647   >40   3   9   312     Particles >38μm   ASTM D7647   >10   0   0   48     Particles >71μm   ASTM D7647   >3   0   0   5	Sodium	ppm	ASTM D5185m		4	<1	<1
Particles >4μm     ASTM D7647     >10000     412     8391     10005       Particles >6μm     ASTM D7647     >2500     141     1217     5450       Particles >14μm     ASTM D7647     >160     11     24     928       Particles >14μm     ASTM D7647     >40     3     9     312       Particles >21μm     ASTM D7647     >10     0     0     48       Particles >38μm     ASTM D7647     >3     0     0     5	Potassium	ppm	ASTM D5185m	>20	<1	<1	<1
Particles >6μm     ASTM D7647     >2500     141     1217     ▲ 5450       Particles >14μm     ASTM D7647     >160     11     24     ▲ 928       Particles >21μm     ASTM D7647     >40     3     9     ▲ 312       Particles >38μm     ASTM D7647     >10     0     0     ▲ 48       Particles >71μm     ASTM D7647     >3     0     0     ▲ 5	FLUID CLEANLINE	SS	method	limit/base	current	history1	history2
Particles >14μm     ASTM D7647     >160     11     24     ▲928       Particles >21μm     ASTM D7647     >40     3     9     ▲ 312       Particles >38μm     ASTM D7647     >10     0     0     ▲ 48       Particles >71μm     ASTM D7647     >3     0     0     ▲ 5	Particles >4µm		ASTM D7647	>10000	412	8391	0005
Particles >21μm     ASTM D7647     >40     3     9     △ 312       Particles >38μm     ASTM D7647     >10     0     0     △ 48       Particles >71μm     ASTM D7647     >3     0     0     △ 5	Particles >6µm		ASTM D7647	>2500	141	1217	▲ 5450
Particles >38μm     ASTM D7647     >10     0     48       Particles >71μm     ASTM D7647     >3     0     45	Particles >14um		ASTM D7647	>160	11	24	<b>9</b> 28
Particles >71μm     ASTM D7647     >3     0     ▲ 5			AOTH DTO 47	. 10	0	9	A 312
			ASTM D7647	>40	3	5	
Dil Cleanliness     ISO 4406 (c)     >20/18/14     16/14/11     20/17/12     ▲ 21/20/17	Particles >21µm						
	Particles >21µm Particles >38µm Particles >71µm		ASTM D7647	>10	0	0	<b>4</b> 8



# **OIL ANALYSIS REPORT**







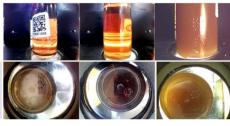
21

0

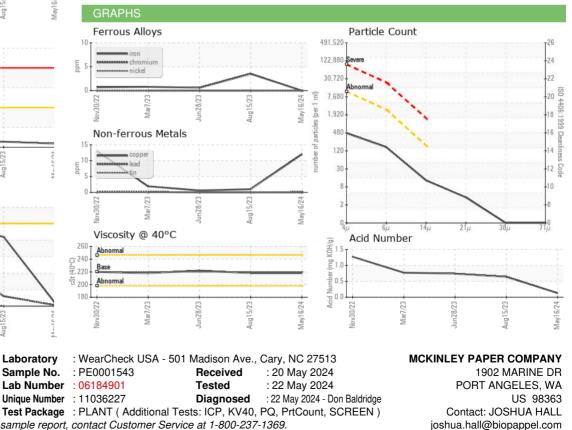
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FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		0.13	0.64	0.74
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	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	>0.2	NEG	NEG	0.2%
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	220	218	218	222
SAMPLE IMAGES	3	method	limit/base	current	history1	history2
			_			

Color



Bottom



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)

Report Id: MCKPOR [WUSCAR] 06184901 (Generated: 05/22/2024 14:28:59) Rev: 1

Certificate 12367

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Submitted By: DUANE DENOTTA

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