

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.

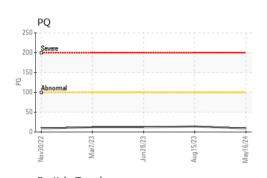
Fluid Condition

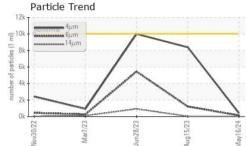
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

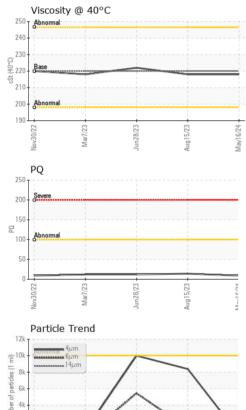
Machine Age hrs Client Info 0 0 0 0 Oil Age hrs Client Info N/A N/A N/A Sample Status Imit/base NORMAL NORMAL ABNORMAL CONTAMINATION method Imit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG WEAR METALS method imit/base current history1 history2 PQ ASTM 05185n >120 0 4 <1 2 ron ppm 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			-	-	
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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
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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
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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
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Particles >38μm ASTM D7647 >10 0 48 Particles >71μm ASTM D7647 >3 0 45	Particles >14um		ASTM D7647	>160	11	24	9 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	4 8



OIL ANALYSIS REPORT







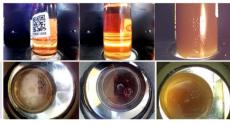
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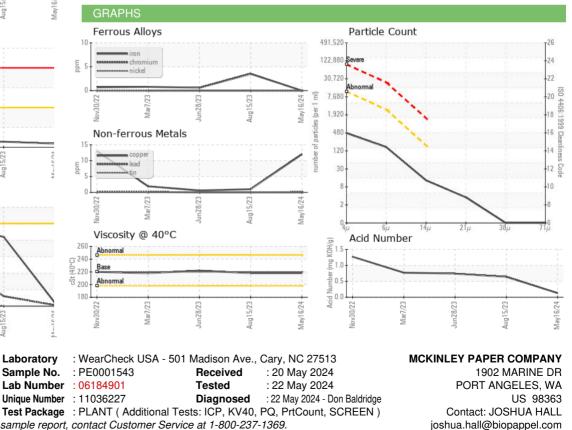
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FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		0.13	0.64	0.74
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	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)

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Certificate 12367

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Submitted By: DUANE DENOTTA

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