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July 29, 2024

Terry Glover USG-Greenville Greenville, MS

Terry,

The following is a summary of findings from the July 2024 monthly vibration survey at the USG Greenville, MS Plant. Please note that we have added an abbreviated last measurement report which is at the end of this report.

QualiTest® uses a four-step rating system for defects.

<u>Class I:</u> Defect is present, but effect on reliability is not clear; no immediate action is required. Continue to normally monitor.

<u>Class II:</u> Defect (s) present that may cause problem in long term (2-6 months). Repair during normal maintenance scheduling. Continue to monitor.

<u>Class III</u>; Defect (s) present that may cause failure in short term (less than 2 months). This should be addressed as soon as practical, with a high maintenance priority. Increase monitoring frequency.

Class IV; Defect (s) present that makes continued reliability unpredictable, and possibility of secondary damage is high. Repairs should be made ASAP. An unscheduled shutdown should be considered for repairs

Hi-Speed **Industrial Service** tests and inspects industrial machinery and equipment and makes recommendations concerning maintenance and repairs based on its experience in the field of industrial repair and maintenance. The information contained herein is provided as an opinion only, not as a guaranty or warranty of the matters discussed herein.

Defects

Perlite

#5 Combustion Blower

Machine was not in service during survey; however, the following most likely still applies: A high subsynchronous vibration remains in the motor axial. This may be a harmonic of belt frequency. Check belts and sheaves for wear and misalignment soon. Rated as a **CLASS III** defect.

#6 Combustion Blower

Axial data shows a dominant 1 x fan rpm vibration. 1-4 x rpm vibration that can still be seen in all fan spectral data is likely due to a combination of issues such as bent or worn fan shaft and internal fan bearing fit looseness/wear. Inspect fan bearings for looseness by performing a lift check of the fan shaft. Should not have more than .003" lift max. Inspect fan shaft for run-out as well. Rated as a **CLASS II** defect.

#8 Combustion Blower

Machine was not in service during survey; however, the following most likely still applies: 1/3 rpm harmonics are present in the fan spectra. This signifies looseness of the fits I(likely shaft or bearing fit wear). Check fan bearings/shaft for looseness and wear as scheduling allows. Rated as a CLASS II defect.

#5 Expander Dust Collector

Machine was not in service during survey; however, the following most likely still applies: Motor has elevated 1 x rpm vibration at motor rpm. This is likely a sheave issue or could also be a base issue. Check sheave alignment ensuring sheaves are aligned properly for offset and angularity. Check face run-out on motor sheave. There should not be no more than .003" face run-out. Check all fasteners and ensure motor base is not defective. Rated as a CLASS II defect.

#6 Expander Dust Collector

Fan continues to have high vibration. Axial data shows a dominant 2 x fan rpm vibration. 1-4 x rpm vibration that can still be seen in all fan spectral data is likely due to a combination of issues such as bent or worn fan shaft and internal fan bearing fit looseness/wear. Inspect fan bearings for looseness by performing a lift check of the fan shaft. Should not have more than .003" lift max. Inspect fan shaft for run-out as well. There is also deteriorated grout around the fan base. Base needs to be re-grouted in the near future. Rated as a **CLASS III** defect.

#7 Expander Dust Collector

Machine was not in service during survey; however, the following most likely still applies: Motor has a beat vibration that appears to be near motor/fan rpm. This may be sheave/belt related. Check sheaves and belts for wear and misalignment and check all base fasteners. Check angularity and offset alignment. Rated as a CLASS II defect.

#8 Expander Dust Collector

Machine was not in service during survey; however, the following most likely still applies: A trim balance was performed earlier this month. We were unable to lower vibration to an acceptable spec. Fan data shows a 1 x and 2 x rpm vibration especially at the fan axial. There are some 3-6 x rpm peaks present as well. We performed shaft runout checks and also performed lift checks on the fan shaft. We found no signs of shaft looseness or excessive runout. However, there may be an issue with fan wheel itself. Cracks in the wheel or hub can cause this type of vibration and may explain why we were having issue with the phase angle staying steady during our balance. It is recommended to perform a thorough inspection of the fan wheel/ hub. The inlet piping will likely need to be removed to gain access to the wheel for inspection. Rated as a CLASS II defect.

Hydropulper

Gearbox and motor have elevated vibration. Gearbox spectral data shows gear mesh harmonics with sidebands of output rpm indicating wear in the gearbox. There may also be an issue with the fluid coupling assembly. Gearbox base was still flexing some during data collection. Gearbox and coupling assembly will need attention soon. Rated as a **CLASS III** defect.

Mix-up/Reclaim

#1 White Water Loop Pump

Motor data shows signs of bearing defects on the ODE motor bearing. Motor will need attention in the next few months. Rated as a **CLASS II** defect.

Dump Chest Agitator

Motor was not running this survey; however, the following likely still applies: Overall vibration has been lower the past few surveys; however, this survey, the motor has an internal knocking vibration. Amplitudes are still low, but the presence of this knocking is concerning. Data shows the vibration to be synchronous to motor rpm. For now, inspect the coupling and the motor as soon as time allows. Rated as a **CLASS II** defect.

#1 White Water Loop Pump

Motor has some high vibration that is sub-synchronous to motor rpm. The sub-synchronous vibration could be belt related or pump sheave related. Check sheaves and belts ensuring belts are tightened properly and sheaves have minimal angular and offset misalignment. Rated as a **CLASS II** defect.

White Water Mix-up Pump

Motor was not running this survey; however, the following likely still applies: New motor has some slight vibration related to belts and sheaves. Belts are also slipping. Check sheaves and belts ensuring belts are tightened properly and sheaves have minimal angular and offset misalignment. Rated as a CLASS II defect.

Beater Tank Transfer Pump

Motor was not running this survey; however, the following likely still applies: The motor data shows motor to have bearing defects. There are two pumps by the beater. This motor is the newer looking motor with the newer pump. Motor needs to swapped out as time allows. Rated as a **CLASS II** defect.

Fiberglass

#1 Oven Circ. Fan

The motor and fan inboard side has high vibration at fan speed. This may be due to some type of sheave issue and/or structural flexibility. Inspect sheaves and belts soon. Ensure sheaves do not have face run-out and offset and angularity alignment is good. Ensure belts are tensioned properly. Rated as **CLASS II** defect.

#2 Oven Circ Fan

Data shows some 1, 2, and 3 x rpm vibrations present in the fan. The motor also has high vibration at 1 x fan rpm. Fan bearing fits may be bad and fan shaft may be bent and or worn. Fan may also have some imbalance due to build-up on fan blades. Rated as a **CLASS II** defect.

Board Line 3

Vacuum Pump MOTORS (2, and 3)

We are still seeing some mid to high frequency noise floor in the motor spectra on the vac pump motors. This issue appears to be stable; however, we suspect possible fluting of the motor bearings may be starting to develop. This is a common issue with AC motors being operated by VFD's that do not having grounding protection. We recommend installing an Aegis Grounding ring inside the motor at the drive end and installing an insulated bearing on the outboard end of the motor. **Rated as CLASS I defect.**

#3 Vacuum Pump

DE pump bearing spectral data continues to show defects are present in the DE pump bearing. We will continue to monitor this closely. Rated as a **CLASS III** defect.

Wet End Combustion Blower

Blower bearings are trending upward on defect frequency vibration. Acceleration has had a steady increase in amplitude. These are signs of bearing defects/wear. Bearings should be scheduled for replacement as soon as scheduling allows. Rated as a **CLASS II** defect.

White Water Pump (outside)

Motor/Pump base is loose to concrete and is causing a high vertical vibration at 12 Hz which appears to be pump speed. Base needs to be anchored soon. Rated as a **CLASS II** defect.

Wet End Circulation Fan

New motor looks good as far as vibration goes. Fan still has some slight 1 x rpm vibration likely due to fan imbalance. A trim balance may be needed in the future. Rated as a **CLASS I** defect.

Finishing

Blue Oven 1 Zone 1 Circulation Fan 1

Fan end fan bearing (outboard) data is showing signs of defects/wear. Motor and fan also have some 1 x rpm vibrations. Fan bearings will need attention soon. Also, ensure sheaves are aligned properly and belts are in good shape and properly tightened. Rated as a **CLASS II** defect.

Blue Oven 1 Zone 1 Circulation Fan 2

Fan end fan bearing (outboard) data is showing signs of defects/wear. Motor and fan also have some 1 x rpm vibrations. Fan bearings will need attention soon. Also, ensure sheaves are aligned properly and belts are in good shape and properly tightened. Rated as a **CLASS II** defect.

Blue Oven 1 Zone 2 Circulation Fan 1 and 2

Motor and fan vibrations remain high at well over 1.2 inches/second peak velocity. Vibration is at fan speed in the motor and fan. This may be due to build-up on the fan. Inspect fan wheel for build-up and damage ASAP. Inspect sheaves and belts as well. Ensure fan bearings have adequate grease. Rated as a **CLASS III** defect.

#1 Finishing Baghouse Dust Collector

Overall vibration was lower this survey. Fana data still shows some 1 x rpm vibration with a small 2 and 3 x rpm vibration. Fan bearing fits and or shaft may have some wear. Fan still may have imbalance as well. Rated as a **CLASS II** defect.

#3 Finishing Baghouse Dust Collector

Vertical data of the motor and fan also indicate some possible drivetrain issues such as sheave misalignment and or belt issues. For now, inspect, sheaves and belts as scheduling allows. Ensure sheaves do not have face run-out and are aligned to spec. Check base springs to ensure they are in good shape and set properly. Rated as a **CLASS II** defect.

Hi-Pressure Water Pump

Motor data still shows signs of bearing defects and/or lube issue. Ensure motor bearings are getting adequate amount of grease. This will continue to be monitored closely. Rated as a **CLASS I** defect.

Abbreviated Last Measurement Summary

Database: USG.rbm Area: PERLITE

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD
B2EXD06FAN - #6 COMBUSTION	BLOWER	(17-Jul-24)
	OVERALL LEVE	L 1K-20KHz
MOH	.099 In/Sec	.343 G-s
MOV		.122 G-s
MIH		.312 G-s
MIV	.300 In/Sec	.043 G-s
MIA	.529 In/Sec	.064 G-s
він	.343 In/Sec	1.329 G-s
BIV		.128 G-s
BIA	.519 In/Sec	.179 G-s
вон	.257 In/Sec	1.047 G-s
BOV	.327 In/Sec	.154 G-s
		(15 - 1 04)
B2EXD0306 - #6 EXPANDER DU		•
No.		L 1K-20KHz
MOH		.306 G-s
MOV	•	.105 G-s
MIH		.362 G-s
MIV	.109 In/Sec	
MIA		.117 G-s
	.908 In/Sec	
	.457 In/Sec	
FIA	1.104 In/Sec	
FOH		1.404 G-s
FOV	.265 In/Sec	.688 G-s
B2PUP02GEA - HYDRAPULPER		(18-Jul-24)
	OVERALL LEVE	L 1K-20KHz
MOH	.483 In/Sec	.406 G-s
MOV		.672 G-s

MIH	.546 In/Sec	.338 G-s
MIV	.186 In/Sec	.185 G-s
MIA	.185 In/Sec	.108 G-s
GIH	.514 In/Sec	2.228 G-s
GIV	.321 In/Sec	.932 G-s
GIA	.093 In/Sec	.595 G-s
GOH	.393 In/Sec	1.467 G-s
GOV	.253 In/Sec	.499 G-s
GOA	.099 In/Sec	.309 G-s

Area: MIX UP/RECLAIM

Area:	MIX UP/RECLAIM	
MEASUREMENT POI	NT OVERALL LEVEI	HFD / VHFD
1WWLOOPPMP - #1	WHITE WATER LOOP PUMP	
		EL 1K-20KHz
MOH		.785 G-s
MOV	.421 In/Sec	
MIH	.421 In/Sec	1.310 G-s
MIV	.547 In/Sec	.175 G-s .251 G-s
MIA	.219 In/Sec	.251 G-s
PIH	.154 In/Sec	.202 G-s
PIV	.161 In/Sec	
PIA	.168 In/Sec	
POH	.177 In/Sec	
POV	.145 In/Sec	.032 G-s
B2WEL1PMP2 - #2	EAST WELL WATER PUMP	(17-Jul-24)
	OVERALL LEVE	L 1K-20KHz
MOH	.198 In/Sec	1.051 G-s
MOV	.360 In/Sec	
MIH	.226 In/Sec	.860 G-s
MIV	.512 In/Sec	.219 G-s
MIA	.412 In/Sec	.219 G-s .352 G-s .849 G-s
		0.40
PIH	.134 In/Sec	.849 G-s
PIH PIV	.134 In/Sec .136 In/Sec	.849 G-s .216 G-s
= ===	.134 In/Sec .136 In/Sec .169 In/Sec	.216 G-s
PIV	.136 In/Sec .169 In/Sec	.216 G-s
PIV PIA	.136 In/Sec .169 In/Sec .288 In/Sec	.216 G-s .283 G-s
PIV PIA POH POV	.136 In/Sec .169 In/Sec .288 In/Sec	.216 G-s .283 G-s .845 G-s
PIV PIA POH POV	.136 In/Sec .169 In/Sec .288 In/Sec .340 In/Sec	.216 G-s .283 G-s .845 G-s .242 G-s

1	- #1	TOP	PRESS	ROLL	DRIVE	(18-Jul-	-24)
						 4	^ ^

- #1 TOP	PRESS ROLL DRIVE	(18-Jul-24)
	OVERALL	LEVEL 1K-20KHz
	.061 In	/Sec .499 G-s
	.125 In	/Sec .213 G-s
	.057 In	/Sec .823 G-s
	.074 In	/Sec .118 G-s
	.105 In	/Sec .137 G-s
	.042 In	/Sec .070 G-s
	.030 In	/Sec .025 G-s
	.027 In	/Sec .020 G-s
	.021 In	/Sec .042 G-s
	.022 In	/Sec .020 G-s
	.022 In	/Sec .015 G-s
	- #1 TOP	

			LL LEVEL	
MOH		.086	In/Sec	.358 G-s
MOV		117	Tn/Sec	078 G-e
MIH		.087	In/Sec	.538 G-s
MIV		.147	In/Sec	.175 G-s
MIA		.155	In/Sec	.106 G-s
GIH		.038	In/Sec In/Sec	.066 G-s
GIV		059	In/Sec	.020 G-s
GIA		018	In/Sec	.041 G-s
GOH		031	In/Sec	.041 G S
GOV			•	.015 G-s
GOA				.013 G-s
GOA		.036	III/ Sec	.027 G-S
DO PDC 00	MEM END	CIRCULATION FAI	. ,	10 T1 24\
B3-KB3-UZ -	MET END			
14011		OVERAL	T- /8	1K-20KHz
МОН		.096	In/Sec In/Sec	.278 G-s
MOV		.032	In/Sec	.037 G-s
MIH			In/Sec	
MIV		.023	In/Sec	.073 G-s .076 G-s
MIA			,	
FIH				.032 G-s
FIV		.032	In/Sec	.032 G-s
FIA		.140	In/Sec	.020 G-s
FOH		.064	In/Sec	.015 G-s
FOV		.032	In/Sec	.0069 G-s
FOA		.052	In/Sec	.0056 G-s
B3KBS01BLW -	WET END	COMBUSTION BLOW	VER (18-Jul-24)
		OVERA	LL LEVEL	1K-20KHz
MOH		.058	In/Sec	.589 G-s
MOV		.071	In/Sec	.121 G-s
MIH		.085	In/Sec	.688 G-s
MIV		.238	In/Sec	.099 G-s
MIA		122	In/Sec	.155 G-s
		098	In/Sec	1 102 G-s
він		.098	In/Sec	1.102 G-s
BIH BIV		.098	In/Sec	1.102 G-s .893 G-s
BIH BIV BIA		.098 .090 .099	In/Sec In/Sec In/Sec	1.102 G-s .893 G-s .696 G-s
BIH BIV BIA BOH		.098 .090 .099 .089	In/Sec In/Sec In/Sec In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s
BIH BIV BIA		.098 .090 .099 .089	In/Sec In/Sec In/Sec In/Sec	1.102 G-s .893 G-s .696 G-s
BIH BIV BIA BOH BOV	DRY END	.098 .090 .099 .089	In/Sec In/Sec In/Sec In/Sec In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s
BIH BIV BIA BOH BOV	DRY END	.098 .090 .099 .089 .144 CIRCULATION FAI	In/Sec In/Sec In/Sec In/Sec In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s
BIH BIV BIA BOH BOV	DRY END	.098 .090 .099 .089 .144 CIRCULATION FAI	In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz
BIH BIV BIA BOH BOV B3-KBS-05 -	DRY END	.098 .090 .099 .089 .144 CIRCULATION FAI OVERAL .059	In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s
BIH BIV BIA BOH BOV B3-KBS-05 -	DRY END	.098 .090 .099 .089 .144 CIRCULATION FAI OVERAI .059	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s
BIH BIV BIA BOH BOV B3-KBS-05 - MOH MOV MIH	DRY END	.098 .090 .099 .089 .144 CIRCULATION FAI OVERAL .059 .029	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s
BIH BIV BIA BOH BOV B3-KBS-05 - MOH MOV MIH MIV	DRY END	.098 .090 .099 .089 .144 CIRCULATION FAI .059 .029 .035 .023	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s
BIH BIV BIA BOH BOV B3-KBS-05 - MOH MOV MIH MIV MIA	DRY END	.098 .090 .099 .089 .144 CIRCULATION FAI .059 .029 .035 .023	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s
BIH BIV BIA BOH BOV B3-KBS-05 - MOH MOV MIH MIV MIA FIH	DRY END	.098 .090 .099 .089 .144 CIRCULATION FAI .059 .029 .035 .023 .022	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s .097 G-s
BIH BIV BIA BOH BOV B3-KBS-05 - MOH MOV MIH MIV MIA FIH FIV	DRY END	.098 .090 .099 .089 .144 CIRCULATION FAI .059 .029 .035 .023 .022 .031	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s .097 G-s .104 G-s
BIH BIV BIA BOH BOV B3-KBS-05 - MOH MOV MIH MIV MIA FIH FIV FIA	DRY END	.098 .090 .099 .089 .144 CIRCULATION FAI .059 .029 .035 .023 .022 .031 .021	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s .097 G-s .104 G-s .094 G-s
BIH BIV BIA BOH BOV B3-KBS-05 - MOH MOV MIH MIV MIA FIH FIV FIA FOH	DRY END	.098 .090 .099 .089 .144 CIRCULATION FAI .059 .029 .035 .023 .022 .031 .021 .028	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s .097 G-s .104 G-s .094 G-s .029 G-s
BIH BIV BIA BOH BOV B3-KBS-05 - MOH MOV MIH MIV MIA FIH FIV FIA FOH FOV	DRY END	.098 .090 .099 .089 .144 CIRCULATION FAI .059 .029 .035 .023 .022 .031 .021 .028 .028	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s .097 G-s .104 G-s .094 G-s .029 G-s .023 G-s
BIH BIV BIA BOH BOV B3-KBS-05 - MOH MOV MIH MIV MIA FIH FIV FIA FOH	DRY END	.098 .090 .099 .089 .144 CIRCULATION FAI .059 .029 .035 .023 .022 .031 .021 .028 .028	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s .097 G-s .104 G-s .094 G-s .029 G-s
BIH BIV BIA BOH BOV B3-KBS-05 - MOH MOV MIH MIV MIA FIH FIV FIA FOH FOV FOA		.098 .090 .099 .089 .144 CIRCULATION FAI .059 .029 .035 .023 .022 .031 .021 .028 .028 .028	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s .097 G-s .104 G-s .094 G-s .029 G-s .023 G-s .015 G-s
BIH BIV BIA BOH BOV B3-KBS-05 - MOH MOV MIH MIV MIA FIH FIV FIA FOH FOV FOA		.098 .090 .099 .089 .144 CIRCULATION FAI .059 .029 .035 .023 .022 .031 .021 .028 .028 .028 .020 .031	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s .097 G-s .104 G-s .094 G-s .029 G-s .023 G-s .015 G-s
BIH BIV BIA BOH BOV B3-KBS-05 - MOH MOV MIH MIV MIA FIH FIV FIA FOH FOV FOA B3KBS04BLW -		.098 .099 .089 .144 CIRCULATION FAI OVERAL .059 .029 .035 .023 .022 .031 .021 .028 .028 .028 .020 .031 COMBUSTION BLOW	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s .097 G-s .104 G-s .094 G-s .029 G-s .023 G-s .015 G-s
BIH BIV BIA BOH BOV B3-KBS-05 - MOH MOV MIH MIV MIA FIH FIV FIA FOH FOV FOA B3KBS04BLW -		.098 .090 .099 .089 .144 CIRCULATION FAI OVERAL .059 .029 .035 .023 .022 .031 .021 .028 .028 .020 .031 COMBUSTION BLOW OVERAL .045	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s .097 G-s .104 G-s .094 G-s .029 G-s .023 G-s .015 G-s 18-Jul-24) 1K-20KHz .430 G-s
BIH BIV BIA BOH BOV B3-KBS-05 - MOH MOV MIH MIV MIA FIH FIV FIA FOH FOV FOA B3KBS04BLW - MOH MOV		.098 .090 .099 .089 .144 CIRCULATION FAI OVERAL .059 .029 .035 .023 .022 .031 .021 .028 .028 .028 .020 .031 COMBUSTION BLOW OVERAL .045 .117	In/Sec	1.102 G-s .893 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s .097 G-s .104 G-s .094 G-s .029 G-s .023 G-s .015 G-s 18-Jul-24) 1K-20KHz .430 G-s .171 G-s
BIH BIV BIA BOH BOV B3-KBS-05 - MOH MOV MIH MIV MIA FIH FIV FIA FOH FOV FOA B3KBS04BLW - MOH MOV MIH		.098 .090 .099 .089 .144 CIRCULATION FAI OVERAL .059 .029 .035 .023 .022 .031 .021 .028 .028 .020 .031 COMBUSTION BLOW OVERAL .045 .117 .057	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s .097 G-s .104 G-s .094 G-s .029 G-s .023 G-s .015 G-s 18-Jul-24) 1K-20KHz .430 G-s .171 G-s .553 G-s
BIH BIV BIA BOH BOV B3-KBS-05 - MOH MOV MIH MIV MIA FIH FIV FIA FOH FOV FOA B3KBS04BLW - MOH MOV MIH MIV		.098 .090 .099 .089 .144 CIRCULATION FAI OVERAL .059 .029 .035 .023 .022 .031 .021 .028 .028 .020 .031 COMBUSTION BLOW OVERAL .045 .117 .057 .089	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s .097 G-s .104 G-s .094 G-s .029 G-s .023 G-s .015 G-s 18-Jul-24) 1K-20KHz .430 G-s .171 G-s .553 G-s .100 G-s
BIH BIV BIA BOH BOV B3-KBS-05 - MOH MOV MIH MIV MIA FIH FIV FIA FOH FOV FOA B3KBS04BLW - MOH MOV MIH MIV MIA		.098 .099 .099 .089 .144 CIRCULATION FAI OVERAL .059 .029 .035 .023 .022 .031 .021 .028 .028 .020 .031 COMBUSTION BLOW OVERAL .045 .117 .057 .089 .064	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s .097 G-s .104 G-s .094 G-s .029 G-s .023 G-s .015 G-s 18-Jul-24) 1K-20KHz .430 G-s .171 G-s .553 G-s .100 G-s .138 G-s
BIH BIV BIA BOH BOV BIA BOW BOV MIH MIV FIA FOH FOV FOA B3KBS04BLW		.098 .090 .099 .089 .144 CIRCULATION FAI OVERAL .059 .029 .035 .023 .022 .031 .021 .028 .028 .020 .031 COMBUSTION BLOW OVERAL .045 .117 .057 .089 .064 .130	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s .097 G-s .104 G-s .094 G-s .029 G-s .023 G-s .015 G-s 18-Jul-24) 1K-20KHz .430 G-s .171 G-s .553 G-s .100 G-s .138 G-s .590 G-s
BIH BIV BIA BOH BOV BIA BOH BOV B3-KBS-05 - MOH MIH MIV FIA FOH FOV FOA B3KBS04BLW - MOH MOV MIH MIV MIA BIH BIV		.098 .099 .099 .089 .144 CIRCULATION FAI OVERAL .059 .029 .035 .023 .022 .031 .021 .028 .028 .020 .031 COMBUSTION BLOW OVERAL .045 .117 .057 .089 .064 .130 .041	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s .097 G-s .104 G-s .094 G-s .029 G-s .023 G-s .015 G-s 18-Jul-24) 1K-20KHz .430 G-s .171 G-s .553 G-s .100 G-s .138 G-s .590 G-s .092 G-s
BIH BIV BIA BOH BOV BIA BOW BOV MIH MIV FIA FOH FOV FOA B3KBS04BLW		.098 .090 .099 .089 .144 CIRCULATION FAI OVERAL .059 .029 .035 .023 .022 .031 .021 .028 .028 .020 .031 COMBUSTION BLOW OVERAL .045 .117 .057 .089 .064 .130 .041 .174	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s .097 G-s .104 G-s .094 G-s .029 G-s .023 G-s .015 G-s 18-Jul-24) 1K-20KHz .430 G-s .171 G-s .553 G-s .100 G-s .138 G-s .590 G-s .092 G-s .092 G-s .092 G-s .092 G-s .099 G-s
BIH BIV BIA BOH BOV BIA BOH MOV MIH FIV FOA BIKBS04BLW FOA MOV MIH MIV MIA BIH BIV		.098 .099 .099 .089 .144 CIRCULATION FAI OVERAL .059 .029 .035 .023 .022 .031 .021 .028 .028 .020 .031 COMBUSTION BLOW OVERAL .045 .117 .057 .089 .064 .130 .041 .174 .096	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s .097 G-s .104 G-s .094 G-s .029 G-s .023 G-s .015 G-s 18-Jul-24) 1K-20KHz .430 G-s .171 G-s .553 G-s .100 G-s .138 G-s .590 G-s .092 G-s .092 G-s .092 G-s .092 G-s .099 G-s
BIH BIV BIA BOH BOV B3-KBS-05 - MOH MOV MIH FIV FIA FOH FOV FOA B3KBS04BLW - MOH MOV MIH MIV MIA BIH BIV BIA		.098 .099 .099 .089 .144 CIRCULATION FAI OVERAL .059 .029 .035 .023 .022 .031 .021 .028 .028 .020 .031 COMBUSTION BLOW OVERAL .045 .117 .057 .089 .064 .130 .041 .174 .096	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s .097 G-s .104 G-s .094 G-s .029 G-s .023 G-s .015 G-s 18-Jul-24) 1K-20KHz .430 G-s .171 G-s .553 G-s .100 G-s .138 G-s .590 G-s .092 G-s .092 G-s .092 G-s .092 G-s .099 G-s
BIH BIV BIA BOH BOV B3-KBS-05 - MOH MOV MIH FIV FIA FOH FOV FOA B3KBS04BLW - MOH MOV MIH MIV MIA BIH BIV BIA BOH BOH		.098 .099 .099 .089 .144 CIRCULATION FAI OVERAL .059 .029 .035 .023 .022 .031 .021 .028 .028 .020 .031 COMBUSTION BLOW OVERAL .045 .117 .057 .089 .064 .130 .041 .174 .096	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s .097 G-s .104 G-s .094 G-s .029 G-s .023 G-s .015 G-s 18-Jul-24) 1K-20KHz .430 G-s .171 G-s .553 G-s .100 G-s .138 G-s .590 G-s .092 G-s .092 G-s .092 G-s .092 G-s .092 G-s .095 G-s .097 G-s
BIH BIV BIA BOH BOV B3-KBS-05 - MOH MOV MIH MIV MIA FIH FIV FIA FOH FOV FOA B3KBS04BLW - MOH MOV MIH MIV MIA BIH BIV BIA BOH BOV	DRY END	.098 .090 .099 .089 .144 CIRCULATION FAI OVERAL .059 .029 .035 .023 .022 .031 .021 .028 .028 .020 .031 COMBUSTION BLOW OVERAL .045 .117 .057 .089 .064 .130 .041 .174 .096 .111 CILN EXHAUST FAI	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s .097 G-s .104 G-s .094 G-s .029 G-s .023 G-s .015 G-s 18-Jul-24) 1K-20KHz .430 G-s .171 G-s .553 G-s .100 G-s .138 G-s .590 G-s .092 G-s .092 G-s .092 G-s .092 G-s .095 G-s .095 G-s
BIH BIV BIA BOH BOV B3-KBS-05 - MOH MOV MIH MIV MIA FIH FIV FIA FOH FOV FOA B3KBS04BLW - MOH MOV MIH MIV MIA BIH BIV BIA BOH BOV	DRY END	.098 .090 .099 .089 .144 CIRCULATION FAI OVERAL .059 .029 .035 .023 .022 .031 .021 .028 .028 .020 .031 COMBUSTION BLOW OVERAL .045 .117 .057 .089 .064 .130 .041 .174 .096 .111 CILN EXHAUST FAI	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s .097 G-s .104 G-s .029 G-s .023 G-s .015 G-s 18-Jul-24) 1K-20KHz .430 G-s .171 G-s .553 G-s .100 G-s .138 G-s .590 G-s .092 G-s .092 G-s .065 G-s
BIH BIV BIA BOH BOV B3-KBS-05 - MOH MOV MIH MIV MIA FIH FIV FIA FOH FOV FOA B3KBS04BLW - MOH MOV MIH MIV MIA BIH BIV BIA BOH BOV	DRY END	.098 .090 .099 .089 .144 CIRCULATION FAI OVERAL .059 .029 .035 .023 .022 .031 .021 .028 .028 .020 .031 COMBUSTION BLOW OVERAL .045 .117 .057 .089 .064 .130 .041 .174 .096 .111 CILN EXHAUST FAI	In/Sec	1.102 G-s .893 G-s .696 G-s 2.252 G-s .856 G-s 18-Jul-24) 1K-20KHz .414 G-s .135 G-s 1.045 G-s .295 G-s .165 G-s .097 G-s .104 G-s .029 G-s .023 G-s .015 G-s 18-Jul-24) 1K-20KHz .430 G-s .171 G-s .553 G-s .100 G-s .138 G-s .590 G-s .092 G-s .092 G-s .065 G-s

MOV	.064	In/Sec	.214 G-s
MIH	.044	In/Sec	.797 G-s
MIV	.060	In/Sec	.227 G-s
MIA	.046	In/Sec	.166 G-s
FIH	.0068	In/Sec	.0040 G-s
FIV	.0093	In/Sec	.0028 G-s
FIA	.015	In/Sec	.0023 G-s
FOH	.0065	In/Sec	.0012 G-s
FOV	.011	In/Sec	.0030 G-s
FOA	.024	In/Sec	.0031 G-s

Area: LINE 3 FINISHING

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD
		- 1 04
HIPRSWTRP - HI-PRESSUR		
MOII	OVERALL LEVEL	
MOH	.146 In/Sec	2.140 G-s
MOV MIH	.262 In/Sec .120 In/Sec	.349 G-s .977 G-s
MIV	.296 In/Sec	.289 G-s
MIA	.118 In/Sec	.702 G-s
P1H	.438 In/Sec	.702 G-S
P1V	.320 In/Sec	.507 G-s .226 G-s
P1A	.207 In/Sec	.220 G S
P2H	.242 In/Sec	1.100 G-s
P2V	.449 In/Sec	.261 G-s
P2A	.175 In/Sec	
FINSHSHRD - FINISHING		-Jul-24)
	OVERALL LEVEL	
MOH	.070 In/Sec	.642 G-s
MOV	.147 In/Sec	.238 G-s
MIH	.057 In/Sec	
MIV	.150 In/Sec	.123 G-s
MIA	.067 In/Sec	.086 G-s
GH	.067 In/Sec	.21/ G-S
GV	.096 In/Sec	.053 G-s
GA	.067 In/Sec	.048 G-s
SH	.056 In/Sec .076 In/Sec	.247 G-s
SV SA	.076 In/Sec	.068 G-s .066 G-s
SA	.044 III/Sec	.000 G-S
F3-GRD-01 - LINE 3 FIN	ISH GRINDER #1 (18	-Jul-24)
	OVERALL LEVEL	1K-20KHz
MOH	.497 In/Sec	.366 G-s
MOV	.650 In/Sec	.066 G-s
MIH	.140 In/Sec	.283 G-s
MIV	.104 In/Sec	.083 G-s .107 G-s
MIA	.099 In/Sec	
GIH	.106 In/Sec	.198 G-s
GIV	.120 In/Sec	.038 G-s
GIA	.064 In/Sec	.043 G-s
F3-GRD-02 - LINE 3 FIN	TSH CRINDER #2 (18	Tu1-24\
10 CLO 02 DINE 5 FIN.	OVERALL LEVEL	
мон	.934 In/Sec	.511 G-s
MOV	.514 In/Sec	.265 G-s
MIH	.339 In/Sec	.388 G-s
MIV	.446 In/Sec	
MIA	.083 In/Sec	.074 G-s .060 G-s
GIH	.104 In/Sec	.305 G-s

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GIV
                            .124 In/Sec
.113 In/Sec
                                            .053 G-s
      GIA
                                            .072 G-s
F3-GRD-04 - LINE 3 FINISH GRINDER #4
                                    (18-Jul-24)
                           OVERALL LEVEL 1K-20KHz
      MOH
                           1.378 In/Sec
                                           .342 G-s
      MOV
                           .697 In/Sec
                                           .120 G-s
      MIH
                            .659 In/Sec
                                           .170 G-s
                           .263 In/Sec
                                           .078 G-s
      MIV
                                           .052 G-s
                           .120 In/Sec
      MIA
                            .222 In/Sec
                                           .304 G-s
      GIH
                                           .074 G-s
                            .138 In/Sec
      GIV
                            .167 In/Sec
                                           .059 G-s
      GIA
F3-GRD-05 - LINE 3 GRINDER DRIVE
                                    (18-Jul-24)
                          OVERALL LEVEL 1K-20KHz
                                          .867 G-s
                            .045 In/Sec
      MOH
                            .072 In/Sec
      MOV
                                            .198 G-s
      MIH
                            .076 In/Sec
                                          1.236 G-s
                                           .318 G-s
      MIV
                           .088 In/Sec
                           .074 In/Sec
                                            .188 G-s
      MIA
      G1I
                           .083 In/Sec
                                           .946 G-s
      GIV
                           .057 In/Sec
                                           .396 G-s
                                           .558 G-s
                           .067 In/Sec
      G1A
                            .082 In/Sec
                                           .786 G-s
      G20
                                           .259 G-s
      GOV
                            .089 In/Sec
                            .056 In/Sec
                                           .234 G-s
      G2A
                                    (18-Jul-24)
B3-KFS-04 - LINE 3 KILN DRIVE
                           OVERALL LEVEL 1K-20KHz
                                          .262 G-s
      MOH
                            .031 In/Sec
                                           .327 G-s
.279 G-s
                            .026 In/Sec
      MTH
                            .029 In/Sec
      MIA
                                           .160 G-s
      G1I
                            .069 In/Sec
                                           .206 G-s
      G1A
                            .057 In/Sec
      G20
                            .060 In/Sec
                                           .273 G-s
      G2A
                            .071 In/Sec
                                           .427 G-s
B3KFS4LUBP - L3 KILN GEARBOX LUBE OIL PMP (18-Jul-24)
                          OVERALL LEVEL 1K-20KHz
                                          .400 G-s
                            .135 In/Sec
      MOH
                            .125 In/Sec
                                           .208 G-s
      MOV
                                           .711 G-s
                            .111 In/Sec
      MIH
      MIV
                            .090 In/Sec
                                            .118 G-s
                            .051 In/Sec
      MIA
                                            .174 G-s
                                           .1,-
.698 G-s
                            .069 In/Sec
      GH
      GV
                            .086 In/Sec
                                            .090 G-s
                                            .125 G-s
                            .060 In/Sec
      GA
                            .125 In/Sec
                                            .214 G-s
      PH
                                            .125 G-s
      ΡV
                            .130 In/Sec
      PA
                            .101 In/Sec
                                            .222 G-s
F3-PAD-06 - BLUE OVEN 1 ZONE1 CIRC FAN 1 (18-Jul-24)
                           OVERALL LEVEL 1K-20KHz
                            .200 In/Sec
                                           .551 G-s
      MOH
                                           .181 G-s
                            .147 In/Sec
      MOV
                            .375 In/Sec
                                           .647 G-s
      MIH
                                           .171 G-s
      MIV
                            .270 In/Sec
                                           .280 G-s
                            .277 In/Sec
      MIA
                                           .411 G-s
                            .360 In/Sec
      FIH
                                           .443 G-s
                            .363 In/Sec
      FIV
                            .296 In/Sec
                                            .395 G-s
      FIA
                            .145 In/Sec
      FOH
                                          2.005 G-s
                                            .627 G-s
      FOV
                            .134 In/Sec
OVN1ZNE1F2 - BLUE OVEN 1 ZONE1 CIRC FAN 2 (18-Jul-24)
                           OVERALL LEVEL 1K-20KHz
                                          .728 G-s
                            .204 In/Sec
      MOH
                                           .080 G-s
      MOV
                            .274 In/Sec
                                           .655 G-s
                            .279 In/Sec
      MIH
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MIV
                             .442 In/Sec
                                             .041 G-s
                                             .048 G-s
      MIA
                             .288 In/Sec
                                            .040
.869 G-s
                             .321 In/Sec
      FIH
                                            .225 G-s
.178 G-s
                             .488 In/Sec
      FIV
      FIA
                            .324 In/Sec
                            .178 In/Sec 1.035 G-s
      FOH
                                            .302 G-s
      FOV
                             .492 In/Sec
OVN1ZNE2F1 - BLUE OVEN 1 ZONE2 CIRC FAN 1 (18-Jul-24)
                            OVERALL LEVEL
                                            1K-20KHz
                             .520 In/Sec
                                            1.482 G-s
      MOH
                                            .317 G-s
                             .676 In/Sec
      MOV
                            1.407 In/Sec
                                            .567 G-s
      MIH
                            1.128 In/Sec
                                            .186 G-s
      MIV
                            2.190 In/Sec
      MIA
                                              .224 G-s
      FIH
                            1.008 In/Sec
                                           1.853 G-s
                           1.656 In/Sec
                                            .257 G-s
      FIV
                            .735 In/Sec
                                             .268 G-s
      FIA
                             .296 In/Sec
                                             .637 G-s
      FOH
                             .174 In/Sec
      FOV
                                             .150 G-s
OVN1ZNE2F2 - BLUE OVEN 1 ZONE2 CIRC FAN 2 (18-Jul-24)
                            OVERALL LEVEL 1K-20KHz
                            .559 In/Sec
                                            .752 G-s
      MOH
      MOV
                            .911 In/Sec
                                            .158 G-s
                                            .855 G-s
      MIH
                            .551 In/Sec
                            1.843 In/Sec
                                            .355 G-s
      MIV
                            .488 In/Sec
                                            .299 G-s
      MIA
                                            .492 G-s
      FIH
                            .955 In/Sec
                                            .086 G-s
      FIV
                            1.567 In/Sec
                             .760 In/Sec
                                             .109 G-s
      FIA
                             .410 In/Sec
                                           3.996 G-s
      FOH
                             .209 In/Sec
                                             .457 G-s
      FOV
OVEN2Z1FAN - BLUE OVEN 2 ZONE1 CIRC FAN (18-Jul-24)
                            OVERALL LEVEL 1K-20KHz
                                            .513 G-s
.126 G-s
      MOH
                             .179 In/Sec
                            .461 In/Sec
      VOM
                            .439 In/Sec
                                            .816 G-s
      MIH
                                            .131 G-s
      MIV
                            .600 In/Sec
                                            .289 G-s
      MIA
                            .365 In/Sec
                                            .589 G-s
      FIH
                            .235 In/Sec
                                            .152 G-s
                            .455 In/Sec
      FIV
                            .214 In/Sec .136 G-s
.156 In/Sec 2.269 G-s
.141 In/Sec .243 G-s
      FIA
      FOH
      FOV
F3SPD06EX - BLUE OVEN 2 EXHAUST FAN (18-Jul-24)
                           OVERALL LEVEL 1K-20KHz
      MOH
                            .311 In/Sec
                                            .862 G-s
      MOV
                            .335 In/Sec
                                             .126 G-s
                            .742 In/Sec
      MIH
                                            .472 G-s
                            .447 In/Sec
      MIV
                                            .218 G-s
                            .567 In/Sec
                                            .185 G-s
      MIA
                                             .162 G-s
                            .314 In/Sec
      HTF
                            .600 In/Sec
                                           1.097 G-s
      FIV
                                           .262 G-s
                             .523 In/Sec
      FIA
                             .399 In/Sec
                                             .207 G-s
      FOH
      FOV
                             .231 In/Sec
                                             .209 G-s
D1DCR02EXH - #1 GRINDER BAGHOUSE DC FAN (18-Jul-24)
                            OVERALL LEVEL
                                            1K-20KHz
                                             .262 G-s
      MOH
                             .142 In/Sec
      MOV
                             .591 In/Sec
                                             .097 G-s
                            .148 In/Sec
                                            .885 G-s
      MIH
                                            .157 G-s
      MIV
                            .249 In/Sec
                            .241 In/Sec
                                            .127 G-s
      MIA
                            .637 In/Sec
                                             .409 G-s
      FIH
                            .408 In/Sec 2.529 G-s
.725 In/Sec .379 G-s
      FIV
      FIA
```

FOH			.573	In/Sec	.480	G-s	
FOV			.379	In/Sec	3.058	G-s	
D1DCR03EXH	- #2	FINISHING	DUST COLL	ECTOR	(18-Jul-24))	
			OVERA	LL LEVEI	L 1K-20E	KHz	
MOH			.188	In/Sec	1.227	G-s	
MOV			.169	In/Sec	.220	G-s	
MIH					3.732		
MIV			.199	In/Sec	. 375	G-s	
MIA			.229	In/Sec	. 624	G-s	
FIH			.212	In/Sec	1.887	G-s	
FIV			.267	In/Sec	.495	G-s	
FIA			.357	In/Sec	.262	G-s	
FOH			.167	In/Sec	.798	G-s	
FOV			.169	In/Sec	.384	G-s	
הוחכים ווייעם	_ #3	FINICUING	DIIST COLL	rcπ∩p	(18-Jul-24)		
DIDCKUILAII	πΟ	TINIBILING			1K-20		
мон					1.018		
MOV					.796		
MIH					2.970		
MIV					.528		
MIA					.844		
FIH				•	.939		
FIV				•			
					.381		
FIA					.633 1.013		
FOH							
FOV			.268	TD/Sec	.281	G-S	
	~						
arification	Of V	ibration Ui	nits:				

Acc --> G-s RMS Vel --> In/Sec PK

As always, it has been a pleasure to serve USG Greenville, MS. If there are any comments or questions, do not hesitate to contact us.

Sincerely,

ISO Certified Vibration Analyst, Category III

Kevin W. Morruell



QualiTest_® Diagnostics

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