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July 10, 2020

Nucor Roll Mill Jackson-Flowood, MS

Subject: July vibration survey

Most of the machines surveyed were found to be in good condition with the exception of the following:

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

Roll Stand 1A Planetary Gearbox

Overall vibration amplitudes are varying with survey while gearbox data show signs of distress. We will continue to monitor this unit closely. Still rated as a **CLASS I** defect for now.

Roll Stand 1 Motor

There is a significant amount of 360 Hz. vibration especially at the drive end axial of the motor. There are also several rpm sidebands around the 360 Hz. peak. This indicates a drive problem such as SCR card fault. There could also be an issue with armature. It is recommended to inspect the drive as soon as practical. This issue will be monitored closely. Because of the electrical vibration, this is rated as a **CLASS II** defect.

Roll Stand 2 int. Gearbox

Input rpm sidebands around the gear mesh frequencies indicate possible oscillation of the input gear set. This could be from an issue with the speed synch on the drives, drive line slop, or some other process issue. Gearbox may need an internal inspection in the future. Rated as a **CLASS I** defect.

Roll Stand 5

Vibration increased some in the gearbox outboard side this survey. A dominant gear mesh vibration is present towards the output of the gearbox. The up and down amplitude of this peak from month to month is likely due to change in tooth load and machine speed. We will continue to monitor this very closely. Rated as a **CLASS I** defect for now.

Roll Stand 5 Cooling Fan Motor

There still appears to be a vibration in this unit that may be due to imbalance of the fan wheel. Inspect, clean fan wheel as time allows. Ensure all bolts are tight. We will monitor this closely. Rated as a **CLASS II** defect.

Roll Stand 6

A dominant gear mesh vibration is present towards the output of the gearbox. Overall vibration increased from last month. The up and down amplitude of this peak is likely due to change in tooth load and speed. This issue seems to have begun after gearbox was repaired. We will continue to monitor this very closely. Rated as a **CLASS I** defect.

Roll Stand 7

Output side of the gearbox vibration increased this survey. We still suspect this to be possibly due to a resonant gear mesh frequency vibration. The up and down amplitude of this peak from month to month is likely due to change in tooth load and machine speed. We will continue to monitor this very closely. Rated as a **CLASS I** defect.

Roll Stand 9

Vibration has increased this survey in the input side of the gearbox. Overall amplitude much higher than normal. Data shows several harmonics at what appears to be gear mesh frequency of the input gear. It is unclear if process/load is affecting this sudden increase in amplitudes. An inspection of the gearbox may be needed in the near future. Rated as a **CLASS II** defect.

Roll Stand 13 Cooling Fan Motor

Fan appears to have vibration associated with fan imbalance. Resonance may also be a factor as this vibration does seem to vary slightly depending on the speed of the DC motor. We will monitor this closely. Rated as a **CLASS I** defect.

Ejector Fan

Overall vibrations are lower in the motor and fan since replacing the motor. There still seems to be higher than normal high frequency acceleration amplitude in the fan bearings especially the outboard bearing. We will monitor this issue closely. Rated as a **CLASS I** defect for now.

Abbreviated Last Measurement Summary

Database: nucorja9.rbm Station: Roll Mill Rolls

	Station:	KOII MIII	ROIIS	
MEASUE	REMENT POINT		OVERALL LEVEL	HFD / VHFD
STD1A	- Stand	1 A	((08-Jul-20)
			OVERALL LEVEL	1K-20KHz
	MOH		.075 In/Sec	.024 G-s
	MIH		.075 In/Sec .061 In/Sec	.033 G-s
	MIA		.108 In/Sec	.126 G-s
	COH		.251 In/Sec .065 In/Sec	.093 G-s
	GIA		.065 In/Sec	.106 G-s
	GIH		.116 In/Sec	.096 G-s
	GI2		.102 In/Sec	.057 G-s
	GI3		.113 In/Sec	.210 G-s
	GI4		.092 In/Sec	
	GI5		.049 In/Sec	.089 G-s
	GI6		.041 In/Sec	.064 G-s .028 G-s
	GOH		.053 In/Sec	.028 G-s
STD2A	- Stand			(08-Jul-20)
			OVERALL LEVEL	1K-20KHz
	MOH		.050 In/Sec	.020 G-s
	MIH		.037 In/Sec	.059 G-s
	MIA		.046 In/Sec .129 In/Sec	.026 G-s
	СОН		.129 In/Sec	.042 G-s
STD1	- Stand			(08-Jul-20)
			OVERALL LEVEL	1K-20KHz
	MOH		.063 In/Sec	
	MIH		.084 In/Sec	072 C -
	MIA		.084 In/Sec .222 In/Sec	.073 G-s
	GIA		.076 In/Sec	.034 G-s
	GIH		.070 In/Sec	.012 G-s
	СОН		.094 In/Sec	.089 G-s
STD2	- Stand	2	((08-Jul-20)
			OVERALL LEVEL	1K-20KHz
	MOH		.067 In/Sec	.058 G-s
	MIH		.093 In/Sec	.116 G-s
	MIA		.093 In/Sec .158 In/Sec	.011 G-s
	GIA		.158 In/Sec	.276 G-s
	GIH		.232 In/Sec	
	СОН		.416 In/Sec	.051 G-s
STD3	- Stand	3		(08-Jul-20)
			OVERALL LEVEL	1K-20KHz
	MOH		.071 In/Sec	.181 G-s
	MIH		.114 In/Sec	.058 G-s
	MIA		.155 In/Sec	.038 G-s
	GIA		.097 In/Sec	.021 G-s
	GIH		.048 In/Sec	.022 G-s
	СОН		.180 In/Sec	.025 G-s
STD4	- Stand	4		(08-Jul-20)
			OVERALL LEVEL	1K-20KHz
	MOH		.060 In/Sec	.050 G-s
	MIH		.075 In/Sec	.057 G-s

	MIA		.105 In/Sec	.076 G-s
	GIA		.061 In/Sec	.022 G-s
	GIH		.045 In/Sec	.020 G-s
	СОН		.312 In/Sec	.025 G-s
STD5	- Stand	. 5	(08	-Jul-20)
				1K-20KHz
	MOH		.053 In/Sec	.032 G-s
	MIH		.043 In/Sec	.040 G-s
	MIA		.080 In/Sec	.031 G-s
	GIA		.090 In/Sec	.0042 G-s
	GIH		.046 In/Sec	.055 G-s
	GOH		.128 In/Sec	.148 G-s
	СОН		·	.042 G-s
			·	
STD6	- Stand	6	(08	-Jul-20)
			OVERALL LEVEL	1K-20KHz
	MOH		.054 In/Sec	.104 G-s
	MIH		.041 In/Sec	.041 G-s
	MIA		.100 In/Sec	.046 G-s
	GIA		.067 In/Sec	.033 G-s
	GIH		.050 In/Sec	.063 G-s
	GOH		.294 In/Sec	.474 G-s
	СОН		.251 In/Sec	.029 G-s
	COII		.231 111/ 566	.023 6 5
STD7	- Stand	7	(08	-Jul-20)
			OVERALL LEVEL	1K-20KHz
	MOH		.059 In/Sec	.154 G-s
	MIH		.040 In/Sec	.070 G-s
	MIA		.067 In/Sec	.141 G-s
	GIA		.053 In/Sec	
	GIH		.091 In/Sec	.052 G-s
	GOH		.687 In/Sec	.315 G-s
	COH		.367 In/Sec	.073 G-s
	COII		.507 III/Sec	.075 G-S
STD8	- Stand	8	(08	-Jul-20)
5150	D carra		OVERALL LEVEL	
	MOH		075 In/Sec	051 G-s
	MOH		.075 In/Sec	
	MIH		068 In/Sec	.062 G-s
	MIH MIA		.068 In/Sec .063 In/Sec	.062 G-s .152 G-s
	MIH MIA GIA		.068 In/Sec .063 In/Sec .108 In/Sec	.062 G-s .152 G-s .066 G-s
	MIH MIA GIA GIH		.068 In/Sec .063 In/Sec .108 In/Sec .116 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s
	MIH MIA GIA		.068 In/Sec .063 In/Sec .108 In/Sec	.062 G-s .152 G-s .066 G-s
STD9	MIH MIA GIA GIH COH	q	.068 In/Sec .063 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s
STD9	MIH MIA GIA GIH	9	.068 In/Sec .063 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s
STD9	MIH MIA GIA GIH COH	9	.068 In/Sec .063 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s
STD9	MIH MIA GIA GIH COH - Stand	9	.068 In/Sec .063 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec .008 OVERALL LEVEL .069 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s -Jul-20) 1K-20KHz .071 G-s
STD9	MIH MIA GIA GIH COH - Stand	9	.068 In/Sec .063 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec .008 OVERALL LEVEL .069 In/Sec .081 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s -Jul-20) 1K-20KHz .071 G-s .200 G-s
STD9	MIH MIA GIA GIH COH - Stand MOH MIH MIA	9	.068 In/Sec .063 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec .008 OVERALL LEVEL .069 In/Sec .081 In/Sec .066 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s -Jul-20) 1K-20KHz .071 G-s .200 G-s .066 G-s
STD9	MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA	9	.068 In/Sec .063 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec .080 In/Sec .069 In/Sec .081 In/Sec .066 In/Sec .132 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s -Jul-20) 1K-20KHz .071 G-s .200 G-s .066 G-s .041 G-s
STD9	MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH	9	.068 In/Sec .063 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec .540 In/Sec .081 In/Sec .081 In/Sec .066 In/Sec .132 In/Sec .237 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s -Jul-20) 1K-20KHz .071 G-s .200 G-s .066 G-s .041 G-s 1.540 G-s
STD9	MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA	9	.068 In/Sec .063 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec .080 In/Sec .069 In/Sec .081 In/Sec .066 In/Sec .132 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s -Jul-20) 1K-20KHz .071 G-s .200 G-s .066 G-s .041 G-s
	MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH		.068 In/Sec .063 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec .540 In/Sec .081 In/Sec .081 In/Sec .066 In/Sec .132 In/Sec .237 In/Sec .342 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s -Jul-20) 1K-20KHz .071 G-s .200 G-s .066 G-s .041 G-s 1.540 G-s .414 G-s
STD9	MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH		.068 In/Sec .063 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec .080 In/Sec .081 In/Sec .066 In/Sec .132 In/Sec .237 In/Sec .342 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s .057 G-s .057 G-s .071 G-s .200 G-s .066 G-s .041 G-s 1.540 G-s .414 G-s
	MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH		.068 In/Sec .063 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec .540 In/Sec .081 In/Sec .081 In/Sec .066 In/Sec .132 In/Sec .237 In/Sec .342 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s -Jul-20) 1K-20KHz .071 G-s .200 G-s .066 G-s .041 G-s 1.540 G-s .414 G-s
	MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH - Stand MOH		.068 In/Sec .063 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec .540 In/Sec .081 In/Sec .081 In/Sec .066 In/Sec .132 In/Sec .237 In/Sec .342 In/Sec .080 OVERALL LEVEL	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s .057 G-s .071 G-s .200 G-s .066 G-s .041 G-s .1.540 G-s .414 G-s .71 G-s .200 G-s
	MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH - Stand MOH MHH		.068 In/Sec .063 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec .540 In/Sec .081 In/Sec .081 In/Sec .066 In/Sec .132 In/Sec .237 In/Sec .342 In/Sec .342 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s .057 G-s .071 G-s .200 G-s .066 G-s .041 G-s .1.540 G-s .414 G-s .71 G-s .041 G-s .041 G-s .041 G-s .041 G-s
	MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH - Stand MOH MIH MIA		.068 In/Sec .063 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec .540 In/Sec .081 In/Sec .081 In/Sec .066 In/Sec .132 In/Sec .237 In/Sec .342 In/Sec .342 In/Sec .048 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s .057 G-s .057 G-s .071 G-s .200 G-s .066 G-s .041 G-s .1.540 G-s .414 G-s .414 G-s .7027 G-s .043 G-s .043 G-s .043 G-s
	MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH GIA GIH COH		.068 In/Sec .063 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec .540 In/Sec .081 In/Sec .081 In/Sec .066 In/Sec .132 In/Sec .237 In/Sec .342 In/Sec .342 In/Sec .027 In/Sec .026 In/Sec .048 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s .057 G-s .057 G-s .071 G-s .200 G-s .066 G-s .041 G-s .1.540 G-s .414 G-s .414 G-s .027 G-s .043 G-s .043 G-s .034 G-s .516 G-s
	MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH GIA GIH GIA GIA GIH		.068 In/Sec .063 In/Sec .108 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec .540 In/Sec .081 In/Sec .081 In/Sec .066 In/Sec .132 In/Sec .237 In/Sec .342 In/Sec .042 In/Sec .048 In/Sec .048 In/Sec .086 In/Sec .086 In/Sec .072 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s .057 G-s .057 G-s .071 G-s .200 G-s .066 G-s .041 G-s .1.540 G-s .414 G-s .414 G-s .414 G-s .027 G-s .043 G-s .043 G-s .034 G-s .034 G-s .339 G-s
	MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH GIA GIH COH		.068 In/Sec .063 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec .540 In/Sec .081 In/Sec .081 In/Sec .066 In/Sec .132 In/Sec .237 In/Sec .342 In/Sec .342 In/Sec .027 In/Sec .026 In/Sec .048 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s .057 G-s .057 G-s .071 G-s .200 G-s .066 G-s .041 G-s .1.540 G-s .414 G-s .414 G-s .414 G-s .027 G-s .043 G-s .043 G-s .034 G-s .034 G-s .339 G-s
STD10	MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH GIA GIH GIA GIA GIH	10	.068 In/Sec .063 In/Sec .108 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec .540 In/Sec .081 In/Sec .081 In/Sec .066 In/Sec .132 In/Sec .237 In/Sec .342 In/Sec .342 In/Sec .048 In/Sec .048 In/Sec .086 In/Sec .086 In/Sec .086 In/Sec .072 In/Sec .148 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s .057 G-s .057 G-s .071 G-s .200 G-s .066 G-s .041 G-s .1.540 G-s .414 G-s .414 G-s .414 G-s .027 G-s .043 G-s .043 G-s .034 G-s .034 G-s .339 G-s
STD10	MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH COH	10	.068 In/Sec .063 In/Sec .108 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec .540 In/Sec .081 In/Sec .081 In/Sec .066 In/Sec .132 In/Sec .237 In/Sec .342 In/Sec .342 In/Sec .048 In/Sec .048 In/Sec .086 In/Sec .086 In/Sec .086 In/Sec .072 In/Sec .148 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s .057 G-s .057 G-s .071 G-s .200 G-s .066 G-s .041 G-s .1.540 G-s .414 G-s .414 G-s .027 G-s .043 G-s .034 G-s .034 G-s .516 G-s .339 G-s .082 G-s
STD10	MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH COH	10	.068 In/Sec .063 In/Sec .108 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec .540 In/Sec .081 In/Sec .081 In/Sec .066 In/Sec .132 In/Sec .237 In/Sec .342 In/Sec .342 In/Sec .026 In/Sec .026 In/Sec .048 In/Sec .048 In/Sec .048 In/Sec .072 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s -Jul-20) 1K-20KHz .071 G-s .200 G-s .066 G-s .041 G-s 1.540 G-s .414 G-s -Jul-20) 1K-20KHz .027 G-s .043 G-s .034 G-s .516 G-s .339 G-s .082 G-s
STD10	MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH - Stand	10	.068 In/Sec .063 In/Sec .108 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec .540 In/Sec .081 In/Sec .081 In/Sec .081 In/Sec .132 In/Sec .132 In/Sec .237 In/Sec .342 In/Sec .048 In/Sec .048 In/Sec .048 In/Sec .048 In/Sec .048 In/Sec .072 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s .057 G-s .057 G-s .071 G-s .200 G-s .066 G-s .041 G-s .1.540 G-s .414 G-s .414 G-s .027 G-s .043 G-s .034 G-s .034 G-s .039 G-s .082 G-s
STD10	MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIA GIH COH - Stand MOH MIH MIA GIA GIA GIH COH - Stand	10	.068 In/Sec .063 In/Sec .108 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec .540 In/Sec .081 In/Sec .081 In/Sec .081 In/Sec .132 In/Sec .132 In/Sec .342 In/Sec .342 In/Sec .048 In/Sec .048 In/Sec .048 In/Sec .048 In/Sec .048 In/Sec .072 In/Sec .072 In/Sec .072 In/Sec .072 In/Sec .072 In/Sec .072 In/Sec .073 In/Sec .0748 In/Sec .075 In/Sec .076 In/Sec .077 In/Sec .077 In/Sec .078 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s .057 G-s .057 G-s .071 G-s .200 G-s .066 G-s .041 G-s .1.540 G-s .414 G-s .414 G-s .027 G-s .043 G-s .034 G-s .034 G-s .039 G-s .082 G-s .082 G-s
STD10	MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH - Stand	10	.068 In/Sec .063 In/Sec .108 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec .540 In/Sec .081 In/Sec .081 In/Sec .081 In/Sec .132 In/Sec .132 In/Sec .342 In/Sec .342 In/Sec .048 In/Sec .048 In/Sec .048 In/Sec .048 In/Sec .048 In/Sec .072 In/Sec .072 In/Sec .072 In/Sec .072 In/Sec .072 In/Sec .072 In/Sec .073 In/Sec .0748 In/Sec .075 In/Sec .076 OVERALL LEVEL .077 In/Sec .077 In/Sec .078 In/Sec .079 In/Sec .079 In/Sec .079 In/Sec .079 In/Sec .079 In/Sec .079 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s .057 G-s .057 G-s .071 G-s .200 G-s .066 G-s .041 G-s .1.540 G-s .414 G-s .414 G-s .027 G-s .043 G-s .034 G-s .034 G-s .339 G-s .082 G-s .082 G-s .027 G-s .082 G-s .082 G-s
STD10	MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH - Stand	10	.068 In/Sec .063 In/Sec .108 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec .540 In/Sec .081 In/Sec .081 In/Sec .081 In/Sec .132 In/Sec .132 In/Sec .237 In/Sec .342 In/Sec .048 In/Sec .048 In/Sec .048 In/Sec .048 In/Sec .048 In/Sec .072 In/Sec .072 In/Sec .072 In/Sec .072 In/Sec .073 In/Sec .074 In/Sec .075 In/Sec .077 In/Sec .077 In/Sec .077 In/Sec .077 In/Sec .077 In/Sec .077 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s -Jul-20) 1K-20KHz .071 G-s .200 G-s .066 G-s .041 G-s 1.540 G-s .414 G-s -Jul-20) 1K-20KHz .027 G-s .043 G-s .034 G-s .516 G-s .339 G-s .082 G-s -Jul-20) 1K-20KHz .061 G-s .027 G-s .023 G-s .084 G-s
STD10	MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH - Stand MOH MIH MIA GIA GIH COH - Stand	10	.068 In/Sec .063 In/Sec .108 In/Sec .108 In/Sec .116 In/Sec .540 In/Sec .540 In/Sec .081 In/Sec .081 In/Sec .081 In/Sec .132 In/Sec .132 In/Sec .342 In/Sec .342 In/Sec .048 In/Sec .048 In/Sec .048 In/Sec .048 In/Sec .048 In/Sec .072 In/Sec .072 In/Sec .072 In/Sec .072 In/Sec .072 In/Sec .072 In/Sec .073 In/Sec .0748 In/Sec .075 In/Sec .076 OVERALL LEVEL .077 In/Sec .077 In/Sec .078 In/Sec .079 In/Sec .079 In/Sec .079 In/Sec .079 In/Sec .079 In/Sec .079 In/Sec	.062 G-s .152 G-s .066 G-s .134 G-s .057 G-s .057 G-s .057 G-s .071 G-s .200 G-s .066 G-s .041 G-s .1.540 G-s .414 G-s .414 G-s .027 G-s .043 G-s .034 G-s .034 G-s .339 G-s .082 G-s .082 G-s .027 G-s .082 G-s .082 G-s

COH .146 In/Sec .010 G-s

STD13	- Stand	d 13	(08-Jul-20)
		OVERALL LEV	(08-Jul-20) EL 1K-20KHz c .257 G-s c .234 G-s
	ОН	.063 In/Se	c .257 G-s
	IH 		
	IA	.062 In/Se	c .138 G-s
_	IA 	.058 In/Se	
_	IH	.048 In/Se	c .051 G-s
_	OH		c .061 G-s
C	OH	.317 In/Se	c .277 G-s
NORTH AC	- NORTI	H AIR COMPRESSOR QUINCY	(08-Jul-20)
			EL 1 - 20 KHz
M	ОН	.131 In/Se	c .186 G-s
M	IH	.128 In/Se	c .357 G-s
M	IA	.200 In/Se	c .247 G-s EL 1K-20KHz
		OVERALL LEV	EL 1K-20KHz
C	IA	.211 In/Se	c .454 G-s
C	IH	.208 In/Se	c .520 G-s
C	OH	.148 In/Se	c .539 G-s
SOUTH AC	- SOUTI	H AIR COMPRESSOR QUINCY	
		OVERALL LEV	EL 1 - 20 KHz c 1.056 G-s
M	OH	.065 In/Se	c 1.056 G-s
	IH	.175 In/Se	c .363 G-s
M	IA	.108 In/Se	c .357 G-s
		OVERALL LEV	EL 1K-20KHz
_	IA	.194 In/Se	c .491 G-s
_	IH	.178 In/Se	
C	ОН	.218 In/Se	c .459 G-s
		Roll Mill Utilities	L HFD / VHFD
MEASUREM	ENT POINT		
		lution Fan	 (08-Jul-20)
DESFAN	- Deso	lution Fan OVERALL LEV	 (08-Ju1-20) EL 1K-20KHz
DESFAN	- Deso	lution Fan OVERALL LEV	 (08-Ju1-20) EL 1K-20KHz
DESFAN	- Deso	lution Fan OVERALL LEV	 (08-Ju1-20) EL 1K-20KHz
DESFAN M	- Deso	lution Fan OVERALL LEV .025 In/Se .021 In/Se	(08-Ju1-20) EL 1K-20KHz C .055 G-s C .036 G-s
DESFAN M	- Deso	lution Fan OVERALL LEV .025 In/Se .021 In/Se	(08-Ju1-20) EL 1K-20KHz C .055 G-s C .036 G-s
DESFAN M M COMFAN	- Deso	lution Fan OVERALL LEV .025 In/Se .021 In/Se ustion Air Fan OVERALL LEV	(08-Jul-20) EL 1K-20KHz C .055 G-s C .036 G-s (08-Jul-20) EL 1K-20KHz
DESFAN MO MO COMFAN	- Desoi OH IH - Combu	lution Fan OVERALL LEV. .025 In/Se. .021 In/Se. ustion Air Fan OVERALL LEV. .101 In/Se.	(08-Ju1-20) EL 1K-20KHz C .055 G-s C .036 G-s (08-Ju1-20) EL 1K-20KHz C .353 G-s
DESFAN MO MO COMFAN MO MO MO MO MO MO MO MO MO M	- Desoi	lution Fan OVERALL LEV025 In/Se021 In/Se. ustion Air Fan OVERALL LEV101 In/Se094 In/Se059 In/Se.	(08-Jul-20) EL 1K-20KHz C .055 G-s C .036 G-s (08-Jul-20) EL 1K-20KHz C .353 G-s C .224 G-s C .075 G-s
DESFAN MO MO COMFAN MO MO MO MO MO MO MO MO MO M	- Deso OH IH - Combu	lution Fan OVERALL LEV025 In/Se021 In/Se. ustion Air Fan OVERALL LEV101 In/Se094 In/Se059 In/Se.	(08-Jul-20) EL 1K-20KHz C .055 G-s C .036 G-s (08-Jul-20) EL 1K-20KHz C .353 G-s C .224 G-s C .075 G-s C .066 G-s
DESFAN MO MO COMFAN MO MO MO MO MO MO MO MO MO M	- Deso	lution Fan OVERALL LEV025 In/Se021 In/Se. ustion Air Fan OVERALL LEV101 In/Se094 In/Se059 In/Se.	(08-Jul-20) EL 1K-20KHz C .055 G-s C .036 G-s (08-Jul-20) EL 1K-20KHz C .353 G-s C .224 G-s C .075 G-s C .066 G-s
DESFAN MO COMFAN MO MO MO MO MO MO MO MO MO M	- Deso	lution Fan OVERALL LEV025 In/Se021 In/Se. ustion Air Fan OVERALL LEV101 In/Se094 In/Se059 In/Se055 In/Se071 In/Se.	(08-Jul-20) EL 1K-20KHz C .055 G-s C .036 G-s (08-Jul-20) EL 1K-20KHz C .353 G-s C .224 G-s C .075 G-s C .066 G-s C .464 G-s
DESFAN MO COMFAN MO MO MO MO MO MO MO MO MO M	- Deso	OVERALL LEV025 In/Se021 In/Se. ustion Air Fan OVERALL LEV101 In/Se094 In/Se059 In/Se055 In/Se071 In/Se.	(08-Jul-20) EL 1K-20KHz C .055 G-s C .036 G-s (08-Jul-20) EL 1K-20KHz C .353 G-s C .224 G-s C .075 G-s C .066 G-s C .464 G-s
DESFAN MM COMFAN MM MM FE FO EJCFAN	- Deso	lution Fan OVERALL LEV025 In/Se021 In/Se. ustion Air Fan OVERALL LEV101 In/Se059 In/Se055 In/Se071 In/Se. tor Air Fan	(08-Jul-20) EL 1K-20KHz C .055 G-s C .036 G-s (08-Jul-20) EL 1K-20KHz C .353 G-s C .224 G-s C .075 G-s C .066 G-s C .464 G-s
DESFAN MM COMFAN MM MM FF FF EJCFAN	- Desoi	lution Fan OVERALL LEV025 In/Se021 In/Se. ustion Air Fan OVERALL LEV101 In/Se094 In/Se059 In/Se055 In/Se071 In/Se. tor Air Fan OVERALL LEV046 In/Se.	(08-Jul-20) EL 1K-20KHz C .055 G-s C .036 G-s (08-Jul-20) EL 1K-20KHz C .353 G-s C .224 G-s C .075 G-s C .066 G-s C .464 G-s (08-Jul-20) EL 1K-20KHz
DESFAN MM MM COMFAN MM MM FF FF EJCFAN MM	- Desoi	Ution Fan OVERALL LEV025 In/Se021 In/Se. OVERALL LEV101 In/Se094 In/Se059 In/Se055 In/Se071 In/Se. tor Air Fan OVERALL LEV046 In/Se047 In/Se	(08-Jul-20) EL 1K-20KHz C .055 G-s C .036 G-s (08-Jul-20) EL 1K-20KHz C .353 G-s C .224 G-s C .075 G-s C .066 G-s C .464 G-s (08-Jul-20) EL 1K-20KHz C .444 G-s
DESFAN MM MM COMFAN MM MM FF FF EJCFAN MM MM MM MM	- Desoi	OVERALL LEV025 In/Se021 In/Se. ustion Air Fan OVERALL LEV101 In/Se094 In/Se059 In/Se055 In/Se071 In/Se. tor Air Fan OVERALL LEV046 In/Se047 In/Se.	(08-Jul-20) EL 1K-20KHz C .055 G-s C .036 G-s (08-Jul-20) EL 1K-20KHz C .353 G-s C .224 G-s C .075 G-s C .066 G-s C .464 G-s (08-Jul-20) EL 1K-20KHz C .440 G-s C .440 G-s C .442 G-s
DESFAN MM MM COMFAN MM MM FF FF EJCFAN MM M	- Desoi	OVERALL LEV025 In/Se021 In/Se. ustion Air Fan OVERALL LEV101 In/Se094 In/Se059 In/Se055 In/Se071 In/Se. tor Air Fan OVERALL LEV046 In/Se042 In/Se033 In/Se.	(08-Jul-20) EL 1K-20KHz C .055 G-s C .036 G-s (08-Jul-20) EL 1K-20KHz C .353 G-s C .224 G-s C .075 G-s C .066 G-s C .464 G-s (08-Jul-20) EL 1K-20KHz C .440 G-s C .440 G-s C .412 G-s C .898 G-s
DESFAN MM MM COMFAN MM MM FF FF EJCFAN MM M	- Desoi	OVERALL LEV025 In/Se021 In/Se. ustion Air Fan OVERALL LEV101 In/Se094 In/Se059 In/Se055 In/Se071 In/Se. tor Air Fan OVERALL LEV046 In/Se042 In/Se033 In/Se.	(08-Jul-20) EL 1K-20KHz C .055 G-s C .036 G-s (08-Jul-20) EL 1K-20KHz C .353 G-s C .224 G-s C .075 G-s C .066 G-s C .464 G-s (08-Jul-20) EL 1K-20KHz C .440 G-s C .440 G-s C .442 G-s
DESFAN MM COMFAN MM MM FF FO EJCFAN MM MM MF FF FF FF FF FF FF F	- Desoi	OVERALL LEV025 In/Se021 In/Se. ustion Air Fan OVERALL LEV101 In/Se094 In/Se059 In/Se055 In/Se071 In/Se. tor Air Fan OVERALL LEV046 In/Se047 In/Se042 In/Se047 In/Se.	(08-Jul-20) EL 1K-20KHz C .055 G-s C .036 G-s (08-Jul-20) EL 1K-20KHz C .353 G-s C .224 G-s C .075 G-s C .066 G-s C .464 G-s (08-Jul-20) EL 1K-20KHz C .243 G-s C .440 G-s C .412 G-s C .898 G-s C .793 G-s
DESFAN MM COMFAN MM MM FF FO EJCFAN MM MM MF FF FF FF FF FF FF F	- Desoi	OVERALL LEV025 In/Se021 In/Se. ustion Air Fan OVERALL LEV101 In/Se094 In/Se059 In/Se055 In/Se071 In/Se. tor Air Fan OVERALL LEV046 In/Se042 In/Se033 In/Se.	(08-Jul-20) EL 1K-20KHz C .055 G-s C .036 G-s (08-Jul-20) EL 1K-20KHz C .353 G-s C .224 G-s C .075 G-s C .066 G-s C .464 G-s (08-Jul-20) EL 1K-20KHz C .243 G-s C .440 G-s C .412 G-s C .898 G-s C .793 G-s
DESFAN MM MM COMFAN MM MM FF FF EJCFAN MM MM FF FF COLPMP2	- Desoi	OVERALL LEV025 In/Se021 In/Se021 In/Se021 In/Se021 In/Se021 In/Se021 In/Se034 In/Se059 In/Se055 In/Se055 In/Se071 In/Se046 In/Se047 In/Se042 In/Se047 In/Se047 In/Se047 In/Se.	(08-Jul-20) EL 1K-20KHz C .055 G-s C .036 G-s (08-Jul-20) EL 1K-20KHz C .353 G-s C .224 G-s C .075 G-s C .066 G-s C .464 G-s (08-Jul-20) EL 1K-20KHz C .243 G-s C .440 G-s C .412 G-s C .412 G-s C .898 G-s C .793 G-s (08-Jul-20) EL 1K-20KHz
DESFAN MM M	- Desoi	OVERALL LEV025 In/Se021 In/Se021 In/Se021 In/Se021 In/Se021 In/Se021 In/Se021 In/Se034 In/Se059 In/Se055 In/Se055 In/Se071 In/Se046 In/Se047 In/Se042 In/Se043 In/Se047 In/Se047 In/Se047 In/Se048 In/Se049 In/Se041 In/Se041 In/Se042 In/Se043 In/Se045 In/Se046 In/Se047 In/Se047 In/Se047 In/Se047 In/Se047 In/Se047 In/Se047 In/Se048 In/Se.	(08-Jul-20) EL 1K-20KHz C .055 G-s C .036 G-s (08-Jul-20) EL 1K-20KHz C .353 G-s C .224 G-s C .075 G-s C .066 G-s C .464 G-s (08-Jul-20) EL 1K-20KHz C .243 G-s C .440 G-s C .412 G-s C .412 G-s C .898 G-s C .2793 G-s C (08-Jul-20) EL 1K-20KHz C .338 G-s C .338 G-s C .459 G-s
DESFAN MM M	- Desoi	OVERALL LEV025 In/Se021 In/Se021 In/Se021 In/Se021 In/Se021 In/Se021 In/Se021 In/Se034 In/Se059 In/Se055 In/Se055 In/Se071 In/Se046 In/Se047 In/Se042 In/Se043 In/Se047 In/Se.	(08-Jul-20) EL 1K-20KHz C .055 G-s C .036 G-s (08-Jul-20) EL 1K-20KHz C .353 G-s C .224 G-s C .075 G-s C .066 G-s C .464 G-s (08-Jul-20) EL 1K-20KHz C .243 G-s C .440 G-s C .412 G-s C .412 G-s C .898 G-s C .2793 G-s C (08-Jul-20) EL 1K-20KHz C .338 G-s C .338 G-s C .459 G-s
DESFAN MM M	- Desoi	OVERALL LEV025 In/Se021 In/Se021 In/Se021 In/Se021 In/Se021 In/Se021 In/Se021 In/Se034 In/Se059 In/Se055 In/Se055 In/Se071 In/Se046 In/Se047 In/Se042 In/Se043 In/Se047 In/Se047 In/Se047 In/Se048 In/Se049 In/Se041 In/Se041 In/Se042 In/Se043 In/Se045 In/Se046 In/Se047 In/Se.	(08-Jul-20) EL 1K-20KHz C .055 G-s C .036 G-s C .036 G-s C .036 G-s C .036 G-s C .204 G-s C .224 G-s C .075 G-s C .066 G-s C .464 G-s C .464 G-s C .440 G-s C .412 G-s C .412 G-s C .412 G-s C .498 G-s C .793 G-s C .338 G-s C .459 G-s C .459 G-s C .127 G-s
DESFAN MM M	- Desoi	OVERALL LEV. .025 In/Se .021 In/Se .021 In/Se .021 In/Se .021 In/Se .021 In/Se .021 In/Se .022 In/Se .034 In/Se .035 In/Se .035 In/Se .047 In/Se .046 In/Se .047 In/Se .042 In/Se .042 In/Se .047 In/Se .048 In/Se .186 In/Se .186 In/Se .150 In/Se .150 In/Se .040 In/Se .	(08-Jul-20) EL 1K-20KHz C .055 G-s C .036 G-s C .036 G-s C .036 G-s C .08-Jul-20) EL 1K-20KHz C .353 G-s C .224 G-s C .075 G-s C .066 G-s C .464 G-s C .464 G-s C .440 G-s C .412 G-s C .41
DESFAN MM M	- Desoi	OVERALL LEV. .025 In/Se .021 In/Se .021 In/Se .021 In/Se .021 In/Se .021 In/Se .021 In/Se .024 In/Se .039 In/Se .055 In/Se .055 In/Se .071 In/Se .046 In/Se .047 In/Se .042 In/Se .042 In/Se .042 In/Se .047 In/Se .048 In/Se .	(08-Jul-20) EL 1K-20KHz C .055 G-s C .036 G-s (08-Jul-20) EL 1K-20KHz C .353 G-s C .224 G-s C .075 G-s C .066 G-s C .464 G-s (08-Jul-20) EL 1K-20KHz C .243 G-s C .440 G-s C .412 G-s C .412 G-s C .412 G-s C .338 G-s C .459 G-s C .459 G-s C .459 G-s C .127 G-s (08-Jul-20) EL 1K-20KHz
DESFAN MM M	- Desoi	OVERALL LEV025 In/Se021 In/Se021 In/Se021 In/Se021 In/Se021 In/Se021 In/Se021 In/Se031 In/Se039 In/Se055 In/Se055 In/Se071 In/Se046 In/Se047 In/Se042 In/Se042 In/Se047 In/Se047 In/Se047 In/Se048 In/Se049 In/Se041 In/Se041 In/Se042 In/Se043 In/Se045 In/Se046 In/Se047 In/Se048 In/Se186 In/Se150 In/Se150 In/Se126 In/Se.	(08-Jul-20) EL 1K-20KHz C .055 G-S C .036 G-S C .036 G-S C .036 G-S C .08-Jul-20) EL 1K-20KHz C .353 G-S C .224 G-S C .075 G-S C .066 G-S C .464 G-S C .464 G-S C .440 G-S C .440 G-S C .412 G-S C .459 G-S C .459 G-S C .459 G-S C .459 G-S C .127 G-S C .08-Jul-20) EL 1K-20KHz C .338 G-S C .459 G-S C .459 G-S C .127 G-S C .08-Jul-20) EL 1K-20KHz C .338 G-S C .459 G-S C .127 G-S
DESFAN MM M	- Desoi	OVERALL LEV. .025 In/Se .021 In/Se .021 In/Se .021 In/Se .021 In/Se .021 In/Se .021 In/Se .024 In/Se .039 In/Se .055 In/Se .055 In/Se .071 In/Se .046 In/Se .047 In/Se .042 In/Se .042 In/Se .042 In/Se .047 In/Se .048 In/Se .	(08-Jul-20) EL 1K-20KHz C .055 G-s C .036 G-s C .036 G-s C .036 G-s C .08-Jul-20) EL 1K-20KHz C .353 G-s C .224 G-s C .075 G-s C .066 G-s C .464 G-s C .464 G-s C .440 G-s C .440 G-s C .412 G-s C .412 G-s C .498 G-s C .2793 G-s C .338 G-s C .459 G-s C .08-Jul-20) EL 1K-20KHz C .338 G-s C .459 G-s C .459 G-s C .459 G-s C .08-Jul-20) EL 1K-20KHz C .338 G-s C .459 G-s C .058 G-s C .058 G-s C .058 G-s C .058 G-s C .021 G-s

FCTNORTH	-	Furna	ace	СT	Driv	e North		(08-Jul-20))	
								L 1K-2		
MOH								.048		
MIH						.266	In/Sec	.12	4 G-s	
MIA						.137	In/Sec	.13	4 G-s	
					_					
SCLPMP1	-	Scale	e Pi	Lt I	Pump					
MOII						OVERA	 	1K-20	KHZ	
MOW MOV						.179	In/Sec	. 270 . 561 . 114	0 G-S	
MOV						.138	In/Sec	. 56.	L G-S	
MIV								.084		
MIA								.06		
MIA										
CTWTR2	_	CT Pump West (08-Jul-20)					0)			
			-					1K-2		
MOH						.139	In/Sec	.43	6 G-s	
MIH								.81		
MIA						.104	In/Sec	.560) G-s	
-										
MILWTR3	-	Mill	Wat	cer						
								L 1K-2		
MOH MIH						.107	In/Sec	. 354	4 G-s	
MIH MTA						.059	In/Sec	.72: .27	3 G-S	
MIA						.059	In/sec	.27	J G-S	
MILWTR1	_	Mill	Wat	ter	Pump	East		(08-Jul-20))	
		-						1K-2		
MOH						.059	In/Sec	.15	5 G-s	
MIH						.046	In/Sec	.15! .24	7 G-s	
MIA						.057	In/Sec	.078	3 G-s	
EASTBOOST	-	East	Boo	oste						
						OVERA	LL ĽEVEI	L 1K-2	OKHz	
МОН								.24		
MIH								.189		
MIA						.301	In/Sec	.10	G-s	
arification	0	f Vib	 rati	ion	IIni+	e ·				
arrrcacion	0.	- v +10.	_ a		J111 C					

As always, it has been a pleasure to NUCOR Steel Flowood, MS. If there are any comments or questions, do not hesitate to contact us.

Sincerely,

Acc

ISO Certified Vibration Analyst, Category III

Kevin W. Morruell

RMS



QualiTest Diagnostics

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