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June 19, 2020

NUCOR Melt Shop Subject: June 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.

<u>Class IV</u>; 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

West Caster Mold Water Pump

High 1 x rpm vibration is present in the motor axial. This indicates angular misalignment. Pump may also have some internal wear. Perform a precision alignment with less than .003" offset and angularity. Ensure there is no soft foot present in the motor. Rated as a **CLASS II** defect.

East Caster Mold Water Pump

Pump is still showing some signs of internal wear. Coupling may also be wearing due to misalignment. Perform a precision alignment with less than .003" offset and angularity. Ensure there is no soft foot present. Rated as a **CLASS I** defect.

West Booster Pump

Pump was not in service during this survey; however, the following most likely still applies: Pump data shows another increase in non-synchronous vibration at the outboard end of the pump. This is good indication of bearing defects taking place in the pump bearings. Pump will need attention SOON. Rated as a **CLASS III** defect.

Cooling Tower #6 Supply Pump

The pump vibration data is still indicating that there is bearing wear, and possibly cavitation in the pump. Inspect ODE pump bearing SOON. Ensure the pump has no inlet restrictions and is operating in the correct part of the curve. Rated as a **CLASS II** defect.

Cooling Tower #3 Supply Pump

The pump appears to have cavitation which is causing a high noise floor in the spectrum. This is also making the ODE pump bearing have high acceleration. This could also be a bearing issues but the noise floor is masking the data somewhat. Pump impeller or other pump internals could also be worn which could be causing this vibration. Pump needs to be inspected as time allows. Rated as a **CLASS II** defect.

Cooling Tower #2 Supply Pump

Pump was not in service during this survey; however, the following most likely still applies: The pump appears to have cavitation which is causing a high noise floor in the spectrum. This is also making the ODE pump bearing have high acceleration. This could also be a bearing issues but the noise floor is masking the data somewhat. Pump impeller or other pump internals may also be worn which could be causing this vibration. Pump needs to be inspected as time allows. Rated as a **CLASS II** defect.

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Furnace Reverse Air Fan

Drive end fan bearing axial data still shows some impacting occurring within the bearing. This could be signs of axial thrusting or some other type of aerodynamic forces being generated by the fan. For now, it is recommended to inspect the fan bearings as time allows. Ensure drive end bearing is fixed and outboard end bearing is set to float. Rated as a **CLASS II** defect.

Spray Chamber Exhaust Fan

The DE fan bearing data still shows a high 1 x fan rpm vibration which typically indicates imbalance of the fan wheel. Outboard fan bearing data also shows a once per revolution impact in the time waveform data and an increase in high frequency acceleration amplitude. This indicates that the bearing is under stress and may have lack of lubrication or mechanical issue. Motor still has a high 1 x fan rpm vibration as well. Inspect fan wheel SOON for build-up/damage/wear and inspect fan bearings especially the ODE fan bearing. This unit may be operating near a critical speed or resonance which could influence some of the high vibration. We will continue to monitor this closely. Rated as a **CLASS III** defect.

************************************* Database: nucorja9.rbm Station: Melt Shop Report Date: 19-Jun-20 14:54 MEASUREMENT POINT OVERALL LEVEL HFD / VHFD _____ _____ -----WCMWP - WEST CASTER MOLD WATER PUMP (17-Jun-20) OVERALL LEVEL 1K-20KHz .109 In/Sec .686 G-s MOH
 .155 In/Sec
 1.265 G-s

 .251 In/Sec
 .814 G-s

 .332 In/Sec
 1.383 G-s

 .199 In/Sec
 .842 G-s
 MIH MIA PIA .842 G-s PIH .104 In/Sec POH .923 G-s - EAST CASTER MOLD WATER PUMP (17-Jun-20) ECMWP OVERALL LEVEL 1K-20KHz .304 G-s MOH .067 In/Sec MIH .073 In/Sec .226 G-s .291 In/Sec MIA .165 G-s .396 In/Sec .903 G-s PIA .811 G-s PIH .115 In/Sec .694 G-s POH .189 In/Sec (17-Jun-20) EBOSTRP - EAST Booster PUMP
 OVERALL LEVEL
 1K-20KHz

 .044 In/Sec
 .242 G-s

 .053 In/Sec
 .379 G-s

 .044 In/Sec
 .242 G-s

 .053 In/Sec
 .379 G-s

 .037 In/Sec
 .089 G-s

 .075 In/Sec
 .133 G-s

 .063 In/Sec
 .091 G-s

 .058 In/Sec
 .108 G-s
 MOH MIH MIA PIA PIH POH ECSWP 1LFT - EAST CASTER SPRAY WP 1 LEFT (17-Jun-20) OVERALL LEVEL 1K-20KHz .283 In/Sec .362 G-s MOH .654 G-s MIH .138 In/Sec .281 G-s MIA .110 In/Sec MCSWP 2LFT - MID CASTER SPRAY WP 2 LEFT (17-Jun-20) OVERALL LEVEL 1K-20KHz .566 In/Sec .241 In/Sec .642 G-s MOH MIH .928 G-s .640 G-s MIA .159 In/Sec WCSWP 4RT - WEST CASTER SPRAY WP 4 RIGH (17-Jun-20) OVERALL LEVEL 1K-20KHz MOH .153 In/Sec .435 G-s .095 In/Sec MIH .385 G-s .417 G-s .106 In/Sec MIA (17-Jun-20) MSERVOHYDP - MIDDLE SERVO Hyd PUMP OVERALL LEVEL 1K-20KHz .119 In/Sec .094 In/Sec .104 In/Sec .188 G-s .250 G-s MOH MIH PIV 1.039 G-s WSERVOHYDP - WEST SERVO Hyd PUMP (17-Jun-20) OVERALL LEVEL 1K-20KHz .070 In/Sec .064 In/Sec .259 G-s .373 G-s MOH MIH .169 In/Sec 1.082 G-s PIV (17-Jun-20) SERVOHRECP - SERVO Hyd RECIRC PUMP OVERALL LEVEL 1K-20KHz .091 In/Sec .265 G-s MOH

Abbreviated Last Measurement Summary

			.069 In/Sec	.628 G-s
PIV			.135 In/Sec	1.315 G-s
N2DECKHYDP	_	North 2ND DECK F	Ivd DIIMP	(17-Jun-20)
NEDDORMIDI		NOT CHI ZND DECK I	OVEDALT TEVET	1K-20KH-
NOU				
MOH			.140 11/Sec	.240 G-S
MIH			.144 In/Sec	.317 G-s
PIV			.334 In/Sec	.660 G-s
2DEKRECIP	-	2ND DECK L&S Hyd	A RECIRC PUM	(17-Jun-20)
		_	OVERALL LEVEL	1K-20KHz
MOH			078 In/Sec	308 G-s
мтш			108 Tr/Sec	224 G-s
MIII			.108 11/300	.224 G-S
PIV			.219 In/Sec	1.356 G-s
S2DECKHYDP	-	SOUTH 2ND DECK H	iyd PUMP	(17-Jun-20)
			OVERALL LEVEL	1K-20KHz
MOH			.421 In/Sec	.583 G-s
мтн			439 Tn/Sec	602 G-s
DTV			474 Tr/Soc	789 6-5
FIV			.4/4 11/560	.709 6-5
1 00000 000		#1 0		(17 7 00)
ISOPLYP	-	#1 Supply Pump		(17-Jun-20)
			OVERALL LEVEL	1K-20KHz
MOH			.063 In/Sec	.243 G-s
MIH			.064 In/Sec	.183 G-s
MIA			.077 In/Sec	.113 G-s
рта			180 Tr/Sec	746 6-8
			152 Tr/Sec	.740 G S
PIH			.152 In/Sec	.845 G-S
POH			.152 In/Sec	.543 G-s
3SUPLYP	-	#3 Supply Pump		(17-Jun-20)
			OVERALL LEVEL	1K-20KHz
MOH			.036 In/Sec	.163 G-s
мтш			063 Tn/Soc	972 C-S
MIN			.003 11/360	. 372 G-3
MIA			.0/9 In/Sec	.650 G-S
PIA			.225 In/Sec	.856 G-s
PIH			.152 In/Sec	.734 G-s
POH			.268 In/Sec	1.842 G-s
4SUPLYP	_	#4 Supply Pump		(17-Jun-20)
			OVERALL LEVEL	1K-20KHz
MOIT				105 0 -
MOH			.045 IN/Sec	.195 G-S
MOH			.045 IN/Sec	.195 G-s
MOH MIH MIA			.045 In/Sec .045 In/Sec .070 In/Sec	.195 G-s .536 G-s .410 G-s
MOH MIH MIA PIA			.045 In/Sec .045 In/Sec .070 In/Sec .180 In/Sec	.195 G-s .536 G-s .410 G-s .903 G-s
MOH MIH MIA PIA PIH			.045 In/Sec .045 In/Sec .070 In/Sec .180 In/Sec .161 In/Sec	.195 G-s .536 G-s .410 G-s .903 G-s .537 G-s
MOH MIH MIA PIA PIH POH			.045 In/Sec .045 In/Sec .070 In/Sec .180 In/Sec .161 In/Sec .182 In/Sec	.195 G-s .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s
MOH MIH MIA PIA PIH POH			.045 In/Sec .045 In/Sec .070 In/Sec .180 In/Sec .161 In/Sec .182 In/Sec	.195 G-s .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s
MOH MIH MIA PIA PIH POH	_	#6 Supply Pump	.045 In/Sec .045 In/Sec .070 In/Sec .180 In/Sec .161 In/Sec .182 In/Sec	.195 G-s .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s
MOH MIH MIA PIA PIH POH	_	#6 Supply Pump	.045 In/Sec .045 In/Sec .180 In/Sec .161 In/Sec .182 In/Sec	.195 G-s .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s (17-Jun-20) 1K-20KHz
MOH MIH MIA PIA PIH POH 6SUPLYP	_	#6 Supply Pump	.045 In/Sec .045 In/Sec .070 In/Sec .180 In/Sec .161 In/Sec .182 In/Sec	.195 G-s .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s (17-Jun-20) 1K-20KHz 226 G c
MOH MIH MIA PIA PIH POH 6SUPLYP MOH	-	#6 Supply Pump	.045 In/Sec .045 In/Sec .180 In/Sec .161 In/Sec .182 In/Sec OVERALL LEVEL .047 In/Sec	.195 G-s .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s (17-Jun-20) 1K-20KHz .226 G-s
MOH MIH MIA PIA PIH POH 6SUPLYP MOH MIH	-	#6 Supply Pump	.045 In/Sec .045 In/Sec .070 In/Sec .180 In/Sec .161 In/Sec .182 In/Sec .047 In/Sec .064 In/Sec	.195 G-s .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s (17-Jun-20) 1K-20KHz .226 G-s .194 G-s
MOH MIH MIA PIA PIH POH 6SUPLYP MOH MIH MIA	-	#6 Supply Pump	.043 IN/Sec .045 In/Sec .070 In/Sec .180 In/Sec .161 In/Sec .182 In/Sec .047 In/Sec .064 In/Sec .076 In/Sec	.195 G-s .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s (17-Jun-20) 1K-20KHz .226 G-s .194 G-s .160 G-s
MOH MIH MIA PIA PIH POH 6SUPLYP MOH MIH MIA PIA	-	#6 Supply Pump	.043 IN/Sec .045 In/Sec .070 In/Sec .180 In/Sec .161 In/Sec .182 In/Sec .047 In/Sec .064 In/Sec .076 In/Sec .191 In/Sec	.195 G-S .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s (17-Jun-20) 1K-20KHz .226 G-s .194 G-s .160 G-s 1.232 G-s
MOH MIH MIA PIA PIH POH 6SUPLYP MOH MIH MIA PIA PIH	-	#6 Supply Pump	.043 IN/Sec .045 In/Sec .070 In/Sec .180 In/Sec .161 In/Sec .182 In/Sec .047 In/Sec .064 In/Sec .076 In/Sec .191 In/Sec .209 In/Sec	.195 G-s .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s (17-Jun-20) 1K-20KHz .226 G-s .194 G-s .160 G-s 1.232 G-s 1.198 G-s
MOH MIH MIA PIA PIH POH 6SUPLYP MOH MIH MIA PIA PIH POH	-	#6 Supply Pump	.045 In/Sec .045 In/Sec .070 In/Sec .180 In/Sec .161 In/Sec .182 In/Sec .047 In/Sec .064 In/Sec .076 In/Sec .191 In/Sec .209 In/Sec	.195 G-s .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s (17-Jun-20) 1K-20KHz .226 G-s .194 G-s .160 G-s 1.232 G-s 1.198 G-s 1.030 G-s
MOH MIH MIA PIA PIH POH 6SUPLYP MOH MIH MIA PIA PIH POH	_	#6 Supply Pump	.043 IN/Sec .045 In/Sec .070 In/Sec .180 In/Sec .161 In/Sec .182 In/Sec .047 In/Sec .064 In/Sec .076 In/Sec .191 In/Sec .209 In/Sec .206 In/Sec	.195 G-s .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s (17-Jun-20) 1K-20KHz .226 G-s .194 G-s 1.232 G-s 1.232 G-s 1.198 G-s 1.030 G-s
MOH MIH MIA PIA PIH POH 6SUPLYP MOH MIH MIA PIA PIH POH	-	#6 Supply Pump	.045 In/Sec .045 In/Sec .070 In/Sec .180 In/Sec .161 In/Sec .182 In/Sec .047 In/Sec .064 In/Sec .076 In/Sec .191 In/Sec .209 In/Sec .206 In/Sec	.195 G-S .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s (17-Jun-20) 1K-20KHz .226 G-s .194 G-s 1.232 G-s 1.198 G-s 1.030 G-s (17-Jun-20)
MOH MIH MIA PIA PIH POH 6SUPLYP MOH MIH MIA PIA PIH POH CBRA	-	#6 Supply Pump CASTER BAGHOUSE	.045 In/Sec .045 In/Sec .070 In/Sec .180 In/Sec .161 In/Sec .182 In/Sec .047 In/Sec .047 In/Sec .064 In/Sec .191 In/Sec .209 In/Sec .206 In/Sec REVERSE AIR	.195 G-S .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s (17-Jun-20) 1K-20KHz .226 G-s .194 G-s .160 G-s 1.232 G-s 1.198 G-s 1.030 G-s (17-Jun-20)
MOH MIH MIA PIA PIH POH 6SUPLYP MOH MIH MIA PIA PIA PIH POH CBRA	-	#6 Supply Pump CASTER BAGHOUSE	.045 IN/Sec .045 IN/Sec .070 IN/Sec .180 IN/Sec .161 IN/Sec .182 IN/Sec .047 IN/Sec .064 IN/Sec .076 IN/Sec .191 IN/Sec .209 IN/Sec .206 IN/Sec REVERSE AIR OVERALL LEVEL	.195 G-S .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s (17-Jun-20) 1K-20KHz .226 G-s .194 G-s .160 G-s 1.232 G-s 1.198 G-s 1.030 G-s (17-Jun-20) 1K-20KHz
MOH MIH MIA PIA PIH POH 6SUPLYP MOH MIH MIA PIA PIH POH CBRA MOH	-	#6 Supply Pump CASTER BAGHOUSE	.045 In/Sec .045 In/Sec .070 In/Sec .180 In/Sec .161 In/Sec .182 In/Sec .047 In/Sec .064 In/Sec .076 In/Sec .191 In/Sec .209 In/Sec .206 In/Sec REVERSE AIR OVERALL LEVEL .048 In/Sec	.195 G-S .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s (17-Jun-20) 1K-20KHz .226 G-s .194 G-s .160 G-s 1.232 G-s 1.198 G-s 1.030 G-s (17-Jun-20) 1K-20KHz .338 G-s
MOH MIH MIA PIA PIH POH 6SUPLYP MOH MIH PIA PIA PIH POH CBRA MOH MIH	-	#6 Supply Pump CASTER BAGHOUSE	.045 IN/Sec .045 IN/Sec .070 In/Sec .180 In/Sec .161 In/Sec .182 In/Sec .047 In/Sec .047 In/Sec .064 In/Sec .076 In/Sec .209 In/Sec .206 In/Sec REVERSE AIR OVERALL LEVEL .048 In/Sec .042 In/Sec	.195 G-S .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s (17-Jun-20) 1K-20KHz .226 G-s .194 G-s .160 G-s 1.232 G-s 1.198 G-s 1.030 G-s (17-Jun-20) 1K-20KHz .338 G-s .292 G-s
MOH MIH MIA PIA PIH POH 6SUPLYP 6SUPLYP MOH MIH PIA PIA PIA PIA PIA PIA PIA PIA MOH MIA	-	#6 Supply Pump CASTER BAGHOUSE	.045 In/Sec .045 In/Sec .070 In/Sec .180 In/Sec .161 In/Sec .182 In/Sec .047 In/Sec .047 In/Sec .047 In/Sec .076 In/Sec .209 In/Sec .206 In/Sec REVERSE AIR OVERALL LEVEL .048 In/Sec .042 In/Sec .031 In/Sec	.195 G-S .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s (17-Jun-20) 1K-20KHz .226 G-s .194 G-s .160 G-s 1.232 G-s 1.98 G-s 1.030 G-s (17-Jun-20) 1K-20KHz .338 G-s .292 G-s .331 G-s
MOH MIH MIA PIA PIH POH 6SUPLYP 6SUPLYP MOH MIH MIA PIA PIH POH CBRA MOH MIH MIA FIH	-	#6 Supply Pump CASTER BAGHOUSE	.045 IN/Sec .045 IN/Sec .070 IN/Sec .180 IN/Sec .161 IN/Sec .182 IN/Sec .047 IN/Sec .047 IN/Sec .047 IN/Sec .047 IN/Sec .047 IN/Sec .209 IN/Sec .206 IN/Sec .206 IN/Sec .048 IN/Sec .048 IN/Sec .041 IN/Sec .051 IN/Sec	.195 G-S .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s (17-Jun-20) 1K-20KHz .226 G-s .194 G-s .160 G-s 1.232 G-s 1.198 G-s 1.030 G-s (17-Jun-20) 1K-20KHz .338 G-s .292 G-s .331 G-s .290 G-s
MOH MIH MIA PIA PIH POH 6SUPLYP 6SUPLYP MOH MIH MIA PIH POH CBRA MOH MIH MIA FIH FOH	-	#6 Supply Pump CASTER BAGHOUSE	.045 In/Sec .045 In/Sec .070 In/Sec .180 In/Sec .161 In/Sec .182 In/Sec .047 In/Sec .047 In/Sec .064 In/Sec .076 In/Sec .209 In/Sec .206 In/Sec .048 In/Sec .048 In/Sec .041 In/Sec .051 In/Sec .051 In/Sec	.195 G-s .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s (17-Jun-20) 1K-20KHz .226 G-s .194 G-s 1.232 G-s 1.198 G-s 1.030 G-s (17-Jun-20) 1K-20KHz .338 G-s .292 G-s .331 G-s .290 G-s .175 G-s
MOH MIH MIA PIA PIH POH 6SUPLYP 6SUPLYP MOH MIH PIA PIH POH CBRA MOH MIH MIA FIH FOH	-	#6 Supply Pump CASTER BAGHOUSE	.045 In/Sec .045 In/Sec .070 In/Sec .180 In/Sec .161 In/Sec .182 In/Sec .047 In/Sec .047 In/Sec .047 In/Sec .047 In/Sec .076 In/Sec .209 In/Sec .206 In/Sec .048 In/Sec .048 In/Sec .041 In/Sec .051 In/Sec .079 In/Sec	.195 G-s .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s (17-Jun-20) 1K-20KHz .226 G-s .194 G-s 1.232 G-s 1.198 G-s 1.030 G-s (17-Jun-20) 1K-20KHz .338 G-s .292 G-s .331 G-s .290 G-s .175 G-s
MOH MIH MIA PIA PIH POH 6SUPLYP 6SUPLYP MOH MIH MIA PIA PIH POH CBRA MOH MIH MIA FIH FOH	-	#6 Supply Pump CASTER BAGHOUSE	.045 In/Sec .045 In/Sec .070 In/Sec .180 In/Sec .161 In/Sec .161 In/Sec .182 In/Sec .047 In/Sec .047 In/Sec .047 In/Sec .076 In/Sec .209 In/Sec .206 In/Sec .048 In/Sec .048 In/Sec .048 In/Sec .051 In/Sec .079 In/Sec	.195 G-S .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s (17-Jun-20) 1K-20KHz .226 G-s .194 G-s 1.232 G-s 1.198 G-s 1.030 G-s (17-Jun-20) 1K-20KHz .338 G-s .292 G-s .331 G-s .290 G-s .175 G-s
MOH MIH MIA PIA PIH POH 6SUPLYP 6SUPLYP MOH MIH PIA PIH POH CBRA MOH MIH MIA FIH FOH	-	#6 Supply Pump CASTER BAGHOUSE	.045 In/Sec .045 In/Sec .070 In/Sec .180 In/Sec .161 In/Sec .182 In/Sec .047 In/Sec .047 In/Sec .064 In/Sec .076 In/Sec .209 In/Sec .206 In/Sec .206 In/Sec .048 In/Sec .042 In/Sec .041 In/Sec .051 In/Sec .079 In/Sec	.195 G-S .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s (17-Jun-20) 1K-20KHz .226 G-s .194 G-s .160 G-s 1.232 G-s 1.198 G-s 1.030 G-s (17-Jun-20) 1K-20KHz .338 G-s .292 G-s .331 G-s .290 G-s .175 G-s
MOH MIH MIA PIA PIH POH 6SUPLYP 6SUPLYP MOH MIH PIA PIA PIA PIA PIA PIA PIA PIA PIA PIA	-	#6 Supply Pump CASTER BAGHOUSE	.045 In/Sec .045 In/Sec .070 In/Sec .180 In/Sec .161 In/Sec .182 In/Sec .047 In/Sec .047 In/Sec .064 In/Sec .076 In/Sec .209 In/Sec .206 In/Sec .206 In/Sec .048 In/Sec .048 In/Sec .042 In/Sec .051 In/Sec .051 In/Sec .079 In/Sec	.195 G-S .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s (17-Jun-20) 1K-20KHz .226 G-s .194 G-s .160 G-s 1.232 G-s 1.198 G-s 1.030 G-s (17-Jun-20) 1K-20KHz .338 G-s .292 G-s .331 G-s .290 G-s .175 G-s (17-Jun-20) 1K-20KHz
MOH MIH MIA PIA PIH POH 6SUPLYP 6SUPLYP MOH MIH MIA PIA PIA PIA PIA PIA PIA PIA PIA PIA P	-	#6 Supply Pump CASTER BAGHOUSE	.045 IN/Sec .045 IN/Sec .070 IN/Sec .180 IN/Sec .161 IN/Sec .161 IN/Sec .047 IN/Sec .047 IN/Sec .047 IN/Sec .047 IN/Sec .041 IN/Sec .209 IN/Sec .206 IN/Sec .206 IN/Sec .042 IN/Sec .042 IN/Sec .051 IN/Sec .051 IN/Sec .079 IN/Sec ID FAN OVERALL LEVEL .060 IN/Sec	.195 G-S .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s (17-Jun-20) 1K-20KHz .226 G-s .194 G-s .160 G-s 1.232 G-s 1.98 G-s 1.030 G-s (17-Jun-20) 1K-20KHz .338 G-s .292 G-s .331 G-s .290 G-s .175 G-s (17-Jun-20) 1K-20KHz .085 G-s
MOH MIH MIA PIA PIH POH 6SUPLYP 6SUPLYP MOH MIA PIA PIH POH CBRA MOH MIA FIH FOH CBID CBID MOH MOY	-	#6 Supply Pump CASTER BAGHOUSE	.045 In/Sec .045 In/Sec .070 In/Sec .180 In/Sec .161 In/Sec .182 In/Sec .047 In/Sec .047 In/Sec .047 In/Sec .047 In/Sec .076 In/Sec .209 In/Sec .206 In/Sec .206 In/Sec .042 In/Sec .042 In/Sec .051 In/Sec .051 In/Sec .079 In/Sec ID FAN OVERALL LEVEL .060 In/Sec .028 In/Sec	.195 G-S .536 G-s .410 G-s .903 G-s .537 G-s .549 G-s (17-Jun-20) 1K-20KHz .226 G-s .194 G-s .160 G-s 1.232 G-s 1.198 G-s 1.030 G-s (17-Jun-20) 1K-20KHz .338 G-s .292 G-s .331 G-s .290 G-s .175 G-s (17-Jun-20) 1K-20KHz .085 G-s .075 G-s

	MIV	.032 In/Sec	.168 G-s
	MIA	.028 In/Sec	.192 G-s
	FIA	.110 In/Sec	.741 G-s
	FIH	.110 In/Sec	2.027 G-s
	FIV	.059 In/Sec	1.556 G-s
	FOH	.093 In/Sec	1.487 G-s
	FOV	.020 In/Sec	.952 G-s
	FOA	.074 In/Sec	1.847 G-s
			(1.7 0.0.)
F.RAF.		- Furnace REVERSE AIR Fan	(1/-Jun-20)
		OVERALL LEVE	L IK-ZUKHZ
	MOH	.065 In/Sec	.310 G-s
	MIR	.050 IN/Sec	.204 G-S
	MIA	.033 In/Sec	.094 G-S
	FIA FTU	.0/4 IN/Sec	.203 G-S
	FUN	.140 IN/Sec	.390 G-S
	FOR	.038 11/368	.340 G-S
EFBHF		- East Furnace Bag House Fan	(17-Jun-20)
21 2111		OVERALL LEVE	1K-20KHz
	мон	052 In/Sec	358 G-s
	мтн	.059 In/Sec	.447 G-s
	MIA	.042 In/Sec	.328 G-s
	FTA	051 In/Sec	374 G-s
	FTH	070 In/Sec	387 G-s
	FOH	.069 In/Sec	1.288 G-s
	- 011		1.100 0 0
WFBHF		- WEST Furnace Bag House Fan	(17-Jun-20)
		OVERALL LEVE	L 1K-20KHz
	MOH	.082 In/Sec	.288 G-s
	MIH	.110 In/Sec	.881 G-s
	MIA	.055 In/Sec	.676 G-s
	FIA	.066 In/Sec	.558 G-s
	FIH	.133 In/Sec	.975 G-s
	FOH	097 In/Sec	1 202 0 -
	ron	1007 211, 500	1.202 G-S
	1011		1.202 G-S
NCHYDP	ron	- North CASTER Hyd PUMP	(17-Jun-20)
NCHYDP	1011	- North CASTER Hyd PUMP OVERALL LEVEL	(17-Jun-20) L 1K-20KHz
NCHYDP	мон	- North CASTER Hyd PUMP OVERALL LEVEL .046 In/Sec	(17-Jun-20) L 1K-20KHz .303 G-s
NCHYDP	MOH MIH	- North CASTER Hyd PUMP OVERALL LEVEL .046 In/Sec .029 In/Sec	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s
NCHYDP	MOH MIH PIH	- North CASTER Hyd PUMP OVERALL LEVEL .046 In/Sec .029 In/Sec .049 In/Sec	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s
NCHYDP	MOH MIH PIH	 North CASTER Hyd PUMP OVERALL LEVEL .046 In/Sec .029 In/Sec .049 In/Sec 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s
NCHYDP	MOH MIH PIH DP	 North CASTER Hyd PUMP OVERALL LEVEL .046 In/Sec .029 In/Sec .049 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEL 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz
NCHYDP	MOH MIH PIH DP MOH	 North CASTER Hyd PUMP OVERALL LEVEL .046 In/Sec .029 In/Sec .049 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEL .063 In/Sec 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s
NCHYDP	MOH MIH PIH DP MOH MIH	 North CASTER Hyd PUMP OVERALL LEVEL .046 In/Sec .029 In/Sec .049 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEL .063 In/Sec .034 In/Sec 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s .335 G-s
NCHYDP	MOH MIH PIH DP MOH MIH PIA	 North CASTER Hyd PUMP OVERALL LEVEL .046 In/Sec .029 In/Sec .049 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEL .063 In/Sec .034 In/Sec .141 In/Sec 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s .335 G-s .325 G-s
NCHYDP MIDCHYI	MOH MIH PIH DP MOH MIH PIA	 North CASTER Hyd PUMP OVERALL LEVEL .046 In/Sec .029 In/Sec .049 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEL .063 In/Sec .034 In/Sec .141 In/Sec 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s .335 G-s .325 G-s
NCHYDP MIDCHYJ SCEXFAJ	MOH MIH PIH DP MOH MIH PIA	 North CASTER Hyd PUMP OVERALL LEVEL .046 In/Sec .029 In/Sec .049 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEL .063 In/Sec .034 In/Sec .141 In/Sec SPRAY CHAMBER EXHAUST Fan 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s .325 G-s .325 G-s (18-Jun-20)
NCHYDP MIDCHYJ SCEXFAI	MOH MIH PIH DP MOH MIH PIA	 North CASTER Hyd PUMP OVERALL LEVEL .046 In/Sec .029 In/Sec .049 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEL .063 In/Sec .034 In/Sec .141 In/Sec SPRAY CHAMBER EXHAUST Fan OVERALL LEVEL 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s .325 G-s .325 G-s (18-Jun-20) L 1K-20KHz
NCHYDP MIDCHYJ SCEXFAI	MOH MIH PIH DP MOH MIH PIA N MOH	 North CASTER Hyd PUMP OVERALL LEVEL .046 In/Sec .029 In/Sec .049 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEL .063 In/Sec .034 In/Sec SPRAY CHAMBER EXHAUST Fan OVERALL LEVEL .380 In/Sec 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s .325 G-s .325 G-s (18-Jun-20) L 1K-20KHz .404 G-s
NCHYDP MIDCHYJ SCEXFAJ	MOH MIH PIH DP MOH MIH PIA N MOH MIH	 North CASTER Hyd PUMP OVERALL LEVEL .046 In/Sec .029 In/Sec .049 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEL .063 In/Sec .034 In/Sec .141 In/Sec SPRAY CHAMBER EXHAUST Fan OVERALL LEVEL .380 In/Sec .353 In/Sec 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s .325 G-s .325 G-s (18-Jun-20) L 1K-20KHz .404 G-s .227 G-s
NCHYDP MIDCHYJ SCEXFAI	MOH MIH PIH DP MOH MIH PIA N MOH MIH MIA	 North CASTER Hyd PUMP OVERALL LEVEL .046 In/Sec .029 In/Sec .049 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEL .063 In/Sec .034 In/Sec .141 In/Sec SPRAY CHAMBER EXHAUST Fan OVERALL LEVEL .380 In/Sec .353 In/Sec .412 In/Sec 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s .325 G-s .325 G-s (18-Jun-20) L 1K-20KHz .404 G-s .227 G-s .223 G-s
NCHYDP MIDCHYJ SCEXFAJ	MOH MIH PIH DP MOH MIH PIA N MOH MIH MIA FIH	 North CASTER Hyd PUMP OVERALL LEVEL .046 In/Sec .029 In/Sec .049 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEL .063 In/Sec .034 In/Sec .141 In/Sec SPRAY CHAMBER EXHAUST Fan OVERALL LEVEL .380 In/Sec .353 In/Sec .412 In/Sec .541 In/Sec 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s .325 G-s .325 G-s (18-Jun-20) L 1K-20KHz .404 G-s .227 G-s .223 G-s .615 G-s
NCHYDP MIDCHY SCEXFA	MOH MIH PIH DP MOH MIH PIA N MOH MIH MIA FIH FOH	 North CASTER Hyd PUMP OVERALL LEVEI .046 In/Sec .029 In/Sec .049 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEI .063 In/Sec .034 In/Sec .141 In/Sec SPRAY CHAMBER EXHAUST Fan OVERALL LEVEI .380 In/Sec .353 In/Sec .412 In/Sec .541 In/Sec 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s .335 G-s .325 G-s (18-Jun-20) L 1K-20KHz .404 G-s .227 G-s .223 G-s .615 G-s 1.513 G-s
NCHYDP MIDCHY SCEXFAI	MOH MIH PIH DP MOH MIH PIA N MOH MIH MIA FIH FOH	 North CASTER Hyd PUMP OVERALL LEVEI .046 In/Sec .029 In/Sec .049 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEI .063 In/Sec .034 In/Sec .141 In/Sec SPRAY CHAMBER EXHAUST Fan OVERALL LEVEI .380 In/Sec .353 In/Sec .412 In/Sec .541 In/Sec WECE NARCO Had DIME 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s .335 G-s .325 G-s (18-Jun-20) L 1K-20KHz .404 G-s .227 G-s .223 G-s .615 G-s 1.513 G-s
NCHYDP MIDCHY SCEXFAI	MOH MIH PIH DP MOH MIH PIA N MOH MIH FIH FOH	 North CASTER Hyd PUMP OVERALL LEVEL .046 In/Sec .029 In/Sec .029 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEL .063 In/Sec .034 In/Sec .141 In/Sec SPRAY CHAMBER EXHAUST Fan OVERALL LEVEL .380 In/Sec .353 In/Sec .412 In/Sec .541 In/Sec WEST NARCO Hyd PUMP OVERALL LEVEL 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s .335 G-s .325 G-s (18-Jun-20) L 1K-20KHz .404 G-s .227 G-s .223 G-s .615 G-s 1.513 G-s (18-Jun-20) L 1K-20KHz
NCHYDP MIDCHYI SCEXFAI	MOH MIH PIH DP MOH MIH PIA N MOH FIH FOH HYDP	 North CASTER Hyd PUMP OVERALL LEVEL .046 In/Sec .029 In/Sec .029 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEL .063 In/Sec .034 In/Sec .141 In/Sec SPRAY CHAMBER EXHAUST Fan OVERALL LEVEL .380 In/Sec .353 In/Sec .412 In/Sec .541 In/Sec WEST NARCO Hyd PUMP OVERALL LEVEL .051 In/Sec 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s .325 G-s (18-Jun-20) L 1K-20KHz .404 G-s .227 G-s .223 G-s .615 G-s 1.513 G-s (18-Jun-20) L 1K-20KHz .27 G-s .223 G-s
NCHYDP MIDCHYI SCEXFAI	MOH MIH PIH DP MOH MIH PIA N MOH MIA FIH FOH HYDP MOH	 North CASTER Hyd PUMP OVERALL LEVEI .046 In/Sec .029 In/Sec .049 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEI .063 In/Sec .034 In/Sec .141 In/Sec SPRAY CHAMBER EXHAUST Fan OVERALL LEVEI .380 In/Sec .353 In/Sec .412 In/Sec .541 In/Sec WEST NARCO Hyd PUMP OVERALL LEVEI .051 In/Sec 050 In/Sec 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s .335 G-s .325 G-s (18-Jun-20) L 1K-20KHz .404 G-s .227 G-s .223 G-s .615 G-s 1.513 G-s (18-Jun-20) L 1K-20KHz .073 G-s 187 G-s
NCHYDP MIDCHYI SCEXFAI	MOH MIH PIH DP MOH MIH PIA N MOH MIH FOH HYDP MOH MIH PTV	 North CASTER Hyd PUMP OVERALL LEVEI .046 In/Sec .029 In/Sec .029 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEI .063 In/Sec .034 In/Sec .141 In/Sec SPRAY CHAMBER EXHAUST Fan OVERALL LEVEI .380 In/Sec .353 In/Sec .412 In/Sec .541 In/Sec WEST NARCO Hyd PUMP OVERALL LEVEI .051 In/Sec .050 In/Sec 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s .335 G-s .325 G-s (18-Jun-20) L 1K-20KHz .404 G-s .227 G-s .223 G-s .615 G-s 1.513 G-s (18-Jun-20) L 1K-20KHz .073 G-s .187 G-s .292 G-s
NCHYDP MIDCHYI SCEXFAI	MOH MIH PIH DP MOH MIH PIA N MOH MIH FOH HYDP MOH MIH PIV	 North CASTER Hyd PUMP OVERALL LEVEL .046 In/Sec .029 In/Sec .049 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEL .063 In/Sec .034 In/Sec .141 In/Sec SPRAY CHAMBER EXHAUST Fan OVERALL LEVEL .380 In/Sec .353 In/Sec .412 In/Sec .435 In/Sec WEST NARCO Hyd PUMP OVERALL LEVEL .051 In/Sec .051 In/Sec .051 In/Sec 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s .325 G-s (18-Jun-20) L 1K-20KHz .404 G-s .227 G-s .223 G-s .615 G-s 1.513 G-s (18-Jun-20) L 1K-20KHz .073 G-s .187 G-s .292 G-s
NCHYDP MIDCHYI SCEXFAI WNARCOI	MOH MIH PIH DP MOH MIH PIA N MOH MIH FOH HYDP MOH MIH PIV LLA	 North CASTER Hyd PUMP OVERALL LEVEL .046 In/Sec .029 In/Sec .049 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEL .063 In/Sec .034 In/Sec .141 In/Sec SPRAY CHAMBER EXHAUST Fan OVERALL LEVEL .380 In/Sec .353 In/Sec .412 In/Sec .541 In/Sec WEST NARCO Hyd PUMP OVERALL LEVEL .051 In/Sec .050 In/Sec .061 In/Sec North Caster Oscillator 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s .335 G-s .325 G-s (18-Jun-20) L 1K-20KHz .404 G-s .227 G-s .223 G-s .615 G-s 1.513 G-s (18-Jun-20) L 1K-20KHz .073 G-s .187 G-s .292 G-s (18-Jun-20)
NCHYDP MIDCHYI SCEXFAI WNARCOI	MOH MIH PIH DP MOH MIH PIA N MOH MIH FOH HYDP MOH MIH PIV LLA	 North CASTER Hyd PUMP OVERALL LEVEI .046 In/Sec .029 In/Sec .049 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEI .063 In/Sec .034 In/Sec .141 In/Sec SPRAY CHAMBER EXHAUST Fan OVERALL LEVEI .380 In/Sec .353 In/Sec .412 In/Sec .541 In/Sec .541 In/Sec WEST NARCO Hyd PUMP OVERALL LEVEI .051 In/Sec .050 In/Sec .061 In/Sec North Caster Oscillator OVERALL LEVEI 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s .325 G-s .325 G-s (18-Jun-20) L 1K-20KHz .404 G-s .227 G-s .223 G-s .615 G-s 1.513 G-s (18-Jun-20) L 1K-20KHz .073 G-s .187 G-s .292 G-s (18-Jun-20) L 1K-20KHz
NCHYDP MIDCHYI SCEXFAI WNARCOI	MOH MIH PIH DP MOH MIH PIA N MOH MIH FOH HYDP MOH MIH PIV LLA MOH	 North CASTER Hyd PUMP OVERALL LEVEI .046 In/Sec .029 In/Sec .049 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEI .063 In/Sec .034 In/Sec .141 In/Sec SPRAY CHAMBER EXHAUST Fan OVERALL LEVEI .380 In/Sec .353 In/Sec .412 In/Sec .435 In/Sec WEST NARCO Hyd PUMP OVERALL LEVEI .051 In/Sec .050 In/Sec North Caster Oscillator OVERALL LEVEI .315 In/Sec 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s .325 G-s .325 G-s (18-Jun-20) L 1K-20KHz .404 G-s .227 G-s .223 G-s .615 G-s 1.513 G-s (18-Jun-20) L 1K-20KHz .073 G-s .187 G-s .292 G-s (18-Jun-20) L 1K-20KHz .120 G-s
NCHYDP MIDCHYI SCEXFAI WNARCOI	MOH MIH PIH DP MOH MIH PIA N MOH MIH FOH HYDP MOH MIH PIV LLA MOH MIH	 North CASTER Hyd PUMP OVERALL LEVEI .046 In/Sec .029 In/Sec .049 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEI .063 In/Sec .034 In/Sec .141 In/Sec SPRAY CHAMBER EXHAUST Fan OVERALL LEVEI .380 In/Sec .353 In/Sec .412 In/Sec .541 In/Sec .541 In/Sec WEST NARCO Hyd PUMP OVERALL LEVEI .051 In/Sec .050 In/Sec North Caster Oscillator OVERALL LEVEI .315 In/Sec .299 In/Sec 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s .335 G-s .325 G-s (18-Jun-20) L 1K-20KHz .404 G-s .227 G-s .223 G-s .615 G-s 1.513 G-s (18-Jun-20) L 1K-20KHz .073 G-s .187 G-s .292 G-s (18-Jun-20) L 1K-20KHz .073 G-s .292 G-s (18-Jun-20) L 1K-20KHz .073 G-s .292 G-s (18-Jun-20) L 1K-20KHz .073 G-s .292 G-s
NCHYDP MIDCHYI SCEXFAI WNARCOI	MOH MIH PIH DP MOH MIH PIA N MOH MIH FOH HYDP MOH MIH PIV LLA MOH MIH MIA	 North CASTER Hyd PUMP OVERALL LEVEI .046 In/Sec .029 In/Sec .049 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEI .063 In/Sec .034 In/Sec .141 In/Sec SPRAY CHAMBER EXHAUST Fan OVERALL LEVEI .380 In/Sec .353 In/Sec .412 In/Sec .541 In/Sec WEST NARCO Hyd PUMP OVERALL LEVEI .051 In/Sec .050 In/Sec .061 In/Sec North Caster Oscillator OVERALL LEVEI .315 In/Sec .299 In/Sec .188 In/Sec 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s .325 G-s .325 G-s (18-Jun-20) L 1K-20KHz .404 G-s .227 G-s .223 G-s .615 G-s 1.513 G-s (18-Jun-20) L 1K-20KHz .073 G-s .187 G-s .292 G-s (18-Jun-20) L 1K-20KHz .073 G-s .292 G-s (18-Jun-20) L 1K-20KHz .073 G-s .292 G-s (18-Jun-20) L 1K-20KHz .073 G-s .292 G-s (18-Jun-20)
NCHYDP MIDCHYI SCEXFAI WNARCOI	MOH MIH PIH DP MOH MIH PIA N MOH MIH FOH HYDP MOH MIH PIV LLA MOH MIH MIA GIA	 North CASTER Hyd PUMP OVERALL LEVEL .046 In/Sec .029 In/Sec .049 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEL .063 In/Sec .034 In/Sec .141 In/Sec SPRAY CHAMBER EXHAUST Fan OVERALL LEVEL .380 In/Sec .353 In/Sec .412 In/Sec .541 In/Sec .541 In/Sec WEST NARCO Hyd PUMP OVERALL LEVEL .051 In/Sec .050 In/Sec .061 In/Sec North Caster Oscillator OVERALL LEVEL .315 In/Sec .299 In/Sec .188 In/Sec 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s .335 G-s .325 G-s (18-Jun-20) L 1K-20KHz .404 G-s .227 G-s .223 G-s .615 G-s 1.513 G-s (18-Jun-20) L 1K-20KHz .073 G-s .187 G-s .292 G-s (18-Jun-20) L 1K-20KHz .073 G-s .187 G-s .292 G-s (18-Jun-20) L 1K-20KHz .073 G-s .187 G-s .292 G-s (18-Jun-20) L 1K-20KHz .099 G-s .357 G-s .198 G-s
NCHYDP MIDCHYI SCEXFAI WNARCOI	MOH MIH PIH DP MOH MIH PIA N MOH MIH FOH HYDP MOH MIH PIV LLA MOH MIH MIA GIA	 North CASTER Hyd PUMP OVERALL LEVEI .046 In/Sec .029 In/Sec .049 In/Sec MIDDLE CASTER Hyd PUMP OVERALL LEVEI .063 In/Sec .034 In/Sec .141 In/Sec SPRAY CHAMBER EXHAUST Fan OVERALL LEVEI .380 In/Sec .353 In/Sec .412 In/Sec .541 In/Sec .541 In/Sec WEST NARCO Hyd PUMP OVERALL LEVEI .051 In/Sec .050 In/Sec .061 In/Sec North Caster Oscillator OVERALL LEVEI .315 In/Sec .299 In/Sec .155 In/Sec .228 In/Sec 	(17-Jun-20) L 1K-20KHz .303 G-s .235 G-s .510 G-s (17-Jun-20) L 1K-20KHz .259 G-s .335 G-s .325 G-s (18-Jun-20) L 1K-20KHz .404 G-s .227 G-s .223 G-s .615 G-s 1.513 G-s (18-Jun-20) L 1K-20KHz .073 G-s .187 G-s .292 G-s (18-Jun-20) L 1K-20KHz .073 G-s .187 G-s .292 G-s (18-Jun-20) L 1K-20KHz .120 G-s .099 G-s .357 G-s .198 G-s .455 G-s

MC	OCILLA	-	Middle	Caster	Oscillato	or	(18-Jun-20))
					OVERA	L LEVEL	1K-201	KHz
	MOH				.244	In/Sec	.121	G-s
	MIH				.249	In/Sec	.133	G-s
	MIA				.195	In/Sec	.077	G-s
	GIA				.169	In/Sec	.082	G-s
	GIH				.172	In/Sec	.099	G-s
	GOH				.154	In/Sec	.142	G-s
SC	OCILLA	-	South (Caster	Oscillato	2	(18-Jun-20))
					OVERA	L LEVEI	1K-201	KHz
	MOH				.199	In/Sec	.071	G-s
	MIH				.170	In/Sec	.055	G-s
	MIA				.137	In/Sec	.108	G-s
	GIA				.091	In/Sec	.275	G-s
	GIH				.119	In/Sec	.485	G−s
	GOH				.106	In/Sec	. 428	G-s
Clari	fication	Of	Vibra	tion Un	its:			
Aco		->	G-s	RMS				
Ve	L	->	In/Sec	C PK				

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

Sincerely,

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Kerin W. Maxuell

ISO Certified Vibration Analyst, Category III



QualiTest Diagnostics Cell: 901-486-4565 Email: <u>kwilliam@gohispeed.com</u>