HI-SPEED INDUSTRIAL SERVICE

MILLINGTON, TN

June 30, 2020

Penn A Kem

Subject: June vibration service

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.

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

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

Class III; 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.

This completes our assessment of your equipment for this survey. Thank you for your business and don't hesitate to call if you have any comments or questions.

Sincerely,

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Detailed Defects

R55-106 Reactor Agitator Motor Gearbox

Large increase in 1x RPM sinusoidal vibration for the outboard vertical of the motor over time. Inspect the motor and coupling for defects that could cause imbalance. Check the motor cooling fan . Loose fasteners can cause similar vibrations as well as shaft run out or eccentricity. **Rated a Class III Defect.**

P4C-102A Boiler Feed Water Pump

The outboard pump bearings are in so much distress that data could not be taken due to over saturation of the accelerometer. Only data from the inboard bearing could be taken. The outboard pump bearings are shot. Inspect the pump and replace any worn or damaged parts. **Rated a Class IV Defect**

P48-7B Roto Jet High Pressure Pump

It appears some maintenance was performed on this unit recently. We will remove it from the report for now. No action required.

Observations

Axial Twin Screw Compressor C67-51

Low level harmonics, or possibly sidebands of female shaft speed and 2x/4x vibrations of Male shaft speed are evident in the data. Overall velocity has dropped throughout the compressor section but there seems to be a slight increase in higher frequency vibrations. The motor data shows a non-synchronous vibration peak with multiple harmonics. This is a good indicator of a possible bearing race defect. No action is required at this time. We will continue to watch the unit closely. **Rated a Class I Defect.**

P24-63 Degree Pump North

The pump axial vibrations have a mound of noise in the spectrum that could be either bearing natural frequencies or some cavitation. We will watch closely going forward. No action required. **Rated a Class I Defect.**

P24-85 DEGS: 85 Degree South Circulating Water Pump

High frequency noise floor has dropped almost completely after repairs. Overall vibrations are at their lowest since our service started. No other actions required

Big Blue Water Pump P24-BigBlue

The data still indicates possible looseness in the bearing fits as well as wear in the pump. The motor data shows bearing frequency defect and harmonics. No immediate actions are required at this time. **Rated a Class I Defect.**

R55-102 Reactor Agitator
The unit motor or gearbox could still be in distress. Highest velocity is in the coupling end of the motor axial at near 0.3”/sec at about 69.5 Hz. This vibration can be seen in multiple points in the gearbox data. The gearbox seemed to be generating audible noises too, which also concerns us. Have the oil analyzed for wear particulate. The next test could be to run the motor uncoupled. **Rated a Class II Defect.**

R53-301 Reactor Agitator
The motor inboard is still over 0.4”/sec velocity peak. Inspect the motor and coupling, and check the shaft alignment, fasteners and frame as time allows. **Rated a Class II Defect.**

R48-2 Reactor Agitator
The bent agitator shaft is still causing distress in the drive components. **Rated a Class II Defect.**

Not Running this Survey but reported previously reported as shown below:

R80-30 Reactor Agitator Motor and Gearbox
The motor shaft speed vibration is very high at nearly 1”/sec velocity peak in the time domain. Inspect the unit ASAP to determine the cause. We believe there could be damage to the fan, loose fasteners, broken feet or structure, or a coupling issue. **Rate a Class III Defect.**

P24-85 Degree Pump North
Vibration data shows an increase at shaft speed and vane pass (5x) for the inboard pump bearing. Water is now leaking from the seal also. Inspect for defects as time allows. **Rated a Class II Defect.**
This unit was under repair at the time of the survey.

CHLR45-1 20 Ton Trane Chiller
The East compressor is now vibrating near 1.3”/sec velocity peak at 60 Hz shaft speed. Vibrations at these levels in either unit will likely cause a reduced lifespan. Have the unit checked for compliance with the manufacture’s specification. **Rated a Class II Defect for now.**

Overall vibrations

Abbreviated Last Measurement Summary
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Database: penn.rbm
Station: NEW EQUIPMENT
Report Date: 30-Jun-20 13:58

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD
B4C101-877 - ZURN BOILER BLOWER	(25-Jun-20)	
	OVERALL LEVEL	1-20 KHZ
11 - MOTOR OUTBOARD HORIZ	.192 In/Sec	.471 G-s
12 - MOTOR OUTBOARD VERT	.105 In/Sec	.822 G-s
13 - MOTOR OUTBOARD AXIAL	.136 In/Sec	.468 G-s
21 - MOTOR INBOARD HORIZ	.170 In/Sec	.631 G-s
22 - MOTOR INBOARD VERT	.160 In/Sec	1.394 G-s
23 - MOTOR INBOARD AXIAL	.147 In/Sec	1.051 G-s
71 - BLOWER INBOARD HORIZ	.164 In/Sec	.700 G-s
72 - BLOWER INBOARD VERT	.124 In/Sec	.277 G-s
73 - BLOWER INBOARD AXIAL	.171 In/Sec	.290 G-s
81 - BLOWER WHEEL END HORIZ	.149 In/Sec	.182 G-s
82 - BLOWER WHEEL END VERT	.112 In/Sec	.336 G-s
83 - BLOWER WHEEL END AXIAL	.116 In/Sec	.656 G-s
P4C-102A - BOILER FEEDWATER PUMP	(25-Jun-20)	
	OVERALL LEVEL	1-20 KHZ
11 - MOTOR OUTBOARD HORIZ	.075 In/Sec	.922 G-s
12 - MOTOR OUTBOARD VERT	.078 In/Sec	.875 G-s
21 - MOTOR INBOARD HORIZ	.076 In/Sec	.696 G-s
22 - MOTOR INBOARD VERT	.097 In/Sec	1.220 G-s
23 - MOTOR INBOARD AXIAL	.044 In/Sec	.782 G-s
71 - PUMP CPLG END HORIZ	.552 In/Sec	12.34 G-s
72 - PUMP CPLG END VERT	.554 In/Sec	12.25 G-s
73 - PUMP CPLG END AXIAL	1.206 In/Sec	12.75 G-s
83 - PUMP OPP END AXIAL	.108 In/Sec	2.351 G-s
P24-102B - JOCKEY FIRE FLANGE PUMP HZ	(25-Jun-20)	
	OVERALL LEVEL	1-20 KHZ
11 - MOTOR OUTBOARD HORIZ	.083 In/Sec	.196 G-s
12 - MOTOR OUTBOARD VERT	.074 In/Sec	.108 G-s
21 - MOTOR INBOARD HORIZ	.053 In/Sec	.078 G-s
22 - MOTOR INBOARD VERT	.052 In/Sec	.142 G-s
23 - MOTOR INBOARD AXIAL	.060 In/Sec	.157 G-s
P24-63DEGN - 63 DEG N WATER PUMP	(25-Jun-20)	
	OVERALL LEVEL	1-20 KHZ
11 - MOTOR OUTBOARD HORIZ	.055 In/Sec	.612 G-s
12 - MOTOR OUTBOARD VERT	.078 In/Sec	.530 G-s
21 - MOTOR INBOARD HORIZ	.088 In/Sec	.470 G-s
22 - MOTOR INBOARD VERT	.053 In/Sec	.457 G-s

23	- MOTOR INBOARD AXIAL	.029 In/Sec	.872 G-s
71	- PUMP CPLG END HORIZ	.065 In/Sec	.867 G-s
72	- PUMP CPLG END VERT	.048 In/Sec	1.151 G-s
73	- PUMP CPLG END AXIAL	.163 In/Sec	3.177 G-s
81	- PUMP OPP END HORIZ	.086 In/Sec	.999 G-s
82	- PUMP OPP END VERT	.041 In/Sec	.868 G-s
83	- PUMP OPP END AXIAL	.157 In/Sec	2.696 G-s

P24-63DEGS - 63 DEG S WATER PUMP (25-Jun-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.098 In/Sec	.532 G-s
12	- MOTOR OUTBOARD VERT	.092 In/Sec	.260 G-s
21	- MOTOR INBOARD HORIZ	.169 In/Sec	.604 G-s
22	- MOTOR INBOARD VERT	.070 In/Sec	1.385 G-s
23	- MOTOR INBOARD AXIAL	.125 In/Sec	.301 G-s
71	- PUMP CPLG END HORIZ	.056 In/Sec	.338 G-s
72	- PUMP CPLG END VERT	.068 In/Sec	.624 G-s
73	- PUMP CPLG END AXIAL	.074 In/Sec	1.145 G-s
81	- PUMP OPP END HORIZ	.078 In/Sec	.496 G-s
82	- PUMP OPP END VERT	.041 In/Sec	.593 G-s
83	- PUMP OPP END AXIAL	.130 In/Sec	1.761 G-s

P24-85DEGS - 85 DEG S WATER CIRC PUMP 125 (25-Jun-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.073 In/Sec	1.102 G-s
12	- MOTOR OUTBOARD VERT	.156 In/Sec	1.624 G-s
21	- MOTOR INBOARD HORIZ	.053 In/Sec	.927 G-s
22	- MOTOR INBOARD VERT	.086 In/Sec	1.159 G-s
23	- MOTOR INBOARD AXIAL	.176 In/Sec	.285 G-s
71	- PUMP CPLG END HORIZ	.140 In/Sec	.551 G-s
72	- PUMP CPLG END VERT	.117 In/Sec	.528 G-s
73	- PUMP CPLG END AXIAL	.233 In/Sec	.090 G-s
81	- PUMP OPP END HORIZ	.100 In/Sec	.847 G-s
82	- PUMP OPP END VERT	.084 In/Sec	1.024 G-s
83	- PUMP OPP END AXIAL	.137 In/Sec	1.698 G-s

P24BGBL876 - BIG BLUE WATER PUMP-63 DEG (25-Jun-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.187 In/Sec	1.014 G-s
12	- MOTOR OUTBOARD VERT	.048 In/Sec	1.793 G-s
21	- MOTOR INBOARD HORIZ	.244 In/Sec	2.698 G-s
22	- MOTOR INBOARD VERT	.058 In/Sec	2.323 G-s
23	- MOTOR INBOARD AXIAL	.099 In/Sec	.969 G-s
71	- PUMP CPLG END HORIZ	.331 In/Sec	.195 G-s
72	- PUMP CPLG END VERT	.191 In/Sec	.686 G-s
73	- PUMP CPLG END AXIAL	.235 In/Sec	.487 G-s
81	- PUMP OPP END HORIZ	.272 In/Sec	1.080 G-s
82	- PUMP OPP END VERT	.214 In/Sec	1.291 G-s
83	- PUMP OPP END AXIAL	.199 In/Sec	.637 G-s

P36-905A - N COOL TWR-NORTH PUMP (25-Jun-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.065 In/Sec	.515 G-s
12	- MOTOR OUTBOARD VERT	.048 In/Sec	.552 G-s
21	- MOTOR INBOARD HORIZ	.062 In/Sec	1.189 G-s
22	- MOTOR INBOARD VERT	.060 In/Sec	.765 G-s
23	- MOTOR INBOARD AXIAL	.045 In/Sec	.150 G-s

71	- PUMP CPLG END HORIZ	.072 In/Sec	1.161 G-s
72	- PUMP CPLG END VERT	.071 In/Sec	1.795 G-s
73	- PUMP CPLG END AXIAL	.165 In/Sec	.390 G-s
81	- PUMP OPP END HORIZ	.099 In/Sec	1.390 G-s
82	- PUMP OPP END VERT	.095 In/Sec	1.798 G-s
83	- PUMP OPP END AXIAL	.104 In/Sec	2.899 G-s

C36-EAST - UTILITY AIRCOMP ROTARY 200HP (25-Jun-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.051 In/Sec	.199 G-s
12	- MOTOR OUTBOARD VERT	.064 In/Sec	.330 G-s
21	- MOTOR INBOARD HORIZ	.067 In/Sec	2.028 G-s
22	- MOTOR INBOARD VERT	.085 In/Sec	1.245 G-s
23	- MOTOR INBOARD AXIAL	.100 In/Sec	.436 G-s
71	- MALE - CPLG END HORIZ	.120 In/Sec	1.209 G-s
72	- MALE - CPLG END VERT	.086 In/Sec	.999 G-s
73	- MALE-CPLG END AXIAL	.149 In/Sec	.877 G-s
81	- MALE- OPP END HORIZ	.109 In/Sec	4.259 G-s
82	- MALE- OPP END VERT	.167 In/Sec	.413 G-s
71F	- FEMALE - CPLG END HORIZ	.110 In/Sec	.930 G-s
72F	- FEMALE- CPLG END VERT	.105 In/Sec	1.454 G-s
81F	- FEMALE- OPP END HORIZ	.081 In/Sec	2.001 G-s
82F	- FEMALE- OPP END VERT	.132 In/Sec	1.979 G-s

C36-SOUTH - UTILITY AIRCOMP ROTARY 150HP (25-Jun-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.126 In/Sec	1.025 G-s
12	- MOTOR OUTBOARD VERT	.100 In/Sec	.987 G-s
21	- MOTOR INBOARD HORIZ	.139 In/Sec	1.560 G-s
22	- MOTOR INBOARD VERT	.113 In/Sec	1.149 G-s
23	- MOTOR INBOARD AXIAL	.197 In/Sec	1.273 G-s
71	- MALE - CPLG END HORIZ	.219 In/Sec	2.321 G-s
72	- MALE - CPLG END VERT	.170 In/Sec	3.414 G-s
73	- MALE-CPLG END AXIAL	.430 In/Sec	4.597 G-s
81	- MALE- OPP END HORIZ	.249 In/Sec	2.461 G-s
82	- MALE- OPP END VERT	.204 In/Sec	2.752 G-s
71F	- FEMALE - CPLG END HORIZ	.170 In/Sec	3.444 G-s
72F	- FEMALE- CPLG END VERT	.169 In/Sec	4.684 G-s
81F	- FEMALE- OPP END HORIZ	.275 In/Sec	3.379 G-s
82F	- FEMALE- OPP END VERT	.248 In/Sec	3.290 G-s

P39-4-877 - WELL PUMP #4 (25-Jun-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR TOP N-S	.339 In/Sec	.369 G-s
12	- MOTOR TOP E-W	.247 In/Sec	.383 G-s
21	- MOTOR BOTTOM N-S	.196 In/Sec	.353 G-s
22	- MOTOR BOTTOM E-W	.115 In/Sec	.282 G-s
23	- MOTOR BOTTOM VERT	.100 In/Sec	.596 G-s

P42-4A - CENTRIFUGAL HOT OIL PUMP 5HP (25-Jun-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.045 In/Sec	.042 G-s
21	- MOTOR INBOARD HORIZ	.026 In/Sec	.090 G-s
23	- MOTOR INBOARD AXIAL	.033 In/Sec	.072 G-s
71	- PUMP COUPLING END HORIZ	.045 In/Sec	.823 G-s
73	- PUMP COUPLING END AXIAL	.047 In/Sec	.372 G-s
81	- PUMP IMPELLER END HORIZ	.038 In/Sec	.603 G-s

P42-4B	- CENTRIFUGAL HOT OIL PUMP 5HP	(25-Jun-20)	
		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.042 In/Sec	.043 G-s
21	- MOTOR INBOARD HORIZ	.026 In/Sec	.138 G-s
23	- MOTOR INBOARD AXIAL	.052 In/Sec	.014 G-s
71	- PUMP COUPLING END HORIZ	.025 In/Sec	.109 G-s
73	- PUMP COUPLING END AXIAL	.019 In/Sec	.086 G-s
81	- PUMP IMPELLER END HORIZ	.036 In/Sec	.020 G-s

P42-4C	- CENTRIFUGAL HOT OIL PMP 15HP	(25-Jun-20)	
		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.100 In/Sec	.460 G-s
21	- MOTOR INBOARD HORIZ	.101 In/Sec	.713 G-s
23	- MOTOR INBOARD AXIAL	.084 In/Sec	.604 G-s
71	- PUMP COUPLING END HORIZ	.230 In/Sec	.661 G-s
81	- PUMP IMPELLER END HORIZ	.123 In/Sec	.687 G-s

P42-4D	- CENTRIFUGAL HOT OIL PUMP 5HP	(25-Jun-20)	
		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.021 In/Sec	.084 G-s
21	- MOTOR INBOARD HORIZ	.031 In/Sec	.148 G-s
23	- MOTOR INBOARD AXIAL	.039 In/Sec	.080 G-s
71	- PUMP COUPLING END HORIZ	.051 In/Sec	.170 G-s
81	- PUMP IMPELLER END HORIZ	.046 In/Sec	.082 G-s

P45-VAC	- NEW VACUUM PUMP PILOT PLANT	(25-Jun-20)	
		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.041 In/Sec	.496 G-s
21	- MOTOR INBOARD HORIZ	.219 In/Sec	.563 G-s
23	- MOTOR INBOARD AXIAL	.061 In/Sec	.504 G-s
71M	- PUMP MALE INPUT END HORIZONTAL	.045 In/Sec	.288 G-s
71F	- PUMP INPUT END FEMALE HZ	.043 In/Sec	.560 G-s
73M	- PUMP INPUT END MALE AXIAL	.056 In/Sec	.439 G-s
81M	- PUMP MALE INPUT OPPOSITE END HZ	.092 In/Sec	.240 G-s
81F	- PUMP FEMALE OPPOSITE END HZ	.085 In/Sec	.422 G-s

P48-7B	- ROTOJET HIGH PRESS PUMP 15HP	(25-Jun-20)	
		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.075 In/Sec	.718 G-s
12	- MOTOR OUTBOARD VERT	.126 In/Sec	.297 G-s
21	- MOTOR INBOARD HORIZ	.080 In/Sec	.627 G-s
22	- MOTOR INBOARD VERT	.100 In/Sec	.771 G-s
23	- MOTOR INBOARD AXIAL	.161 In/Sec	.223 G-s
71	- PUMP CPLG END HORIZ	.224 In/Sec	1.018 G-s
72	- PUMP CPLG END VERT	.103 In/Sec	.789 G-s
73	- PUMP CPLG END AXIAL	.063 In/Sec	1.274 G-s
81	- PUMP OPP END HORIZ	.269 In/Sec	.651 G-s
82	- PUMP OPP END VERT	.146 In/Sec	.894 G-s

R48-2	- AGITATOR GEARBOX FAULK 15HP	(25-Jun-20)	
		OVERALL LEVEL	
11	- MOTOR OUTBOARD HORIZ	.417 In/Sec	
12	- MOTOR OUTBOARD VERT	.534 In/Sec	
21	- MOTOR INBOARD HORIZ	.293 In/Sec	
22	- MOTOR INBOARD VERT	.374 In/Sec	
23	- MOTOR INBOARD AXIAL	.121 In/Sec	

31	- GEARBOX INPUT SHAFT-INBD HOR	.214 In/Sec	
32	- GEARBOX INPUT SHAFT INBD VERT	.286 In/Sec	
33	- GEARBOX INPUT SHAFT INBD AXIAL	.156 In/Sec	
41	- GEARBOX INPUT SHAFT OUTBD HOR	.167 In/Sec	
42	- GEARBOX INPUT SHAFT OUTBD VERT	.300 In/Sec	
43	- GEARBOX INPUT SHAFT OUTBD AXIAL	.068 In/Sec	
51	- GEARBOX OUTPUT SHAFT TOP N-S	.146 In/Sec	

C53-1A-050 - C1-A H2 COMPRESSOR (25-Jun-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.100 In/Sec	1.249 G-s
12	- MOTOR OUTBOARD VERT	.085 In/Sec	1.030 G-s
21	- MOTOR INBOARD HORIZ	.107 In/Sec	.560 G-s
22	- MOTOR INBOARD VERT	.122 In/Sec	1.763 G-s
23	- MOTOR INBOARD AXIAL	.079 In/Sec	.726 G-s
71	- PUMP CPLG END HORIZ	.213 In/Sec	.306 G-s
72	- PUMP CPLG END VERT	.098 In/Sec	.334 G-s
73	- PUMP CPLG END AXIAL	.148 In/Sec	.355 G-s
81	- PUMP OPP END HORIZ	.208 In/Sec	.118 G-s
82	- PUMP OPP END VERT	.109 In/Sec	.084 G-s

C53-301A - C-301A RECIP COMPRESSOR (25-Jun-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.085 In/Sec	1.884 G-s
12	- MOTOR OUTBOARD VERT	.090 In/Sec	1.177 G-s
21	- MOTOR INBOARD HORIZ	.095 In/Sec	.404 G-s
22	- MOTOR INBOARD VERT	.161 In/Sec	.155 G-s
23	- MOTOR INBOARD AXIAL	.149 In/Sec	.201 G-s
71	- CRANKSHAFT DRIVE END HORIZ	.089 In/Sec	.078 G-s
72	- CRANKSHAFT DRIVE END VERT	.071 In/Sec	.096 G-s
73	- CRANKSHAFT DRIVE END AXIAL	.206 In/Sec	.135 G-s
81	- CRANKSHAFT OPP END HORIZ	.096 In/Sec	.102 G-s
82	- CRANKSHAFT OPP END VERT	.074 In/Sec	.117 G-s

P53-301 - ANSI CENTRIFUGAL PUMP 50 HP (25-Jun-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.085 In/Sec	.207 G-s
12	- MOTOR OUTBOARD VERT	.100 In/Sec	.131 G-s
21	- MOTOR INBOARD HORIZ	.081 In/Sec	.542 G-s
22	- MOTOR INBOARD VERT	.131 In/Sec	.153 G-s
23	- MOTOR INBOARD AXIAL	.145 In/Sec	.265 G-s
71	- PUMP CPLG END HORIZ	.078 In/Sec	.347 G-s
72	- PUMP CPLG END VERT	.084 In/Sec	.354 G-s
73	- PUMP CPLG END AXIAL	.060 In/Sec	.776 G-s
81	- PUMP OPP END HORIZ	.053 In/Sec	.443 G-s
82	- PUMP OPP END VERT	.047 In/Sec	.291 G-s

R53-301 - AGITATOR GBX CHEMINEER 15HP (25-Jun-20)

		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.268 In/Sec
12	- MOTOR OUTBOARD VERT	.178 In/Sec
21	- MOTOR INBOARD HORIZ	.277 In/Sec
22	- MOTOR INBOARD VERT	.310 In/Sec
23	- MOTOR INBOARD AXIAL	.452 In/Sec
31	- GEARBOX INPUT SHAFT-INBD HOR	.181 In/Sec
32	- GEARBOX INPUT SHAFT INBD VERT	.045 In/Sec
33	- GEARBOX INPUT SHAFT INBD AXIAL	.175 In/Sec

41	- GEARBOX INPUT SHAFT OUTBD HOR	.173 In/Sec	
42	- GEARBOX INPUT SHAFT OUTBD VERT	.051 In/Sec	
51	- GEARBOX OUTPUT SHAFT TOP N-S	.163 In/Sec	
52	- GEARBOX OUTPUT SHAFT TOP E-W	.051 In/Sec	
61	- GEARBOX OUTPUT SHAFT MID N-S	.105 In/Sec	
71	- GEARBOX OUTPUT SHAFT BOT N-S	.021 In/Sec	

P53-310A - GRUNDFOSS VERT PUMP 10HP (25-Jun-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.122 In/Sec	.121 G-s
12	- MOTOR OUTBOARD VERT	.091 In/Sec	.181 G-s
21	- MOTOR INBOARD HORIZ	.022 In/Sec	.256 G-s
22	- MOTOR INBOARD VERT	.056 In/Sec	.170 G-s
23	- MOTOR INBOARD AXIAL	.015 In/Sec	.188 G-s
71	- PUMP CPLG END HORIZ	.065 In/Sec	.174 G-s
72	- PUMP CPLG END VERT	.139 In/Sec	.152 G-s
73	- PUMP CPLG END AXIAL	.030 In/Sec	.160 G-s
81	- PUMP OPP END HORIZ	.017 In/Sec	.065 G-s
82	- PUMP OPP END VERT	.013 In/Sec	.067 G-s
83	- PUMP OPP END AXIAL	.019 In/Sec	.124 G-s

C54--115 - COMP 2CYL 2 STAGE 75 HP (25-Jun-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.047 In/Sec	.724 G-s
12	- MOTOR OUTBOARD VERT	.133 In/Sec	.488 G-s
21	- MOTOR INBOARD HORIZ	.049 In/Sec	.939 G-s
22	- MOTOR INBOARD VERT	.050 In/Sec	.405 G-s
23	- MOTOR INBOARD AXIAL	.165 In/Sec	.243 G-s
71	- PUMP CPLG END HORIZ	.035 In/Sec	.038 G-s
72	- PUMP CPLG END VERT	.023 In/Sec	.026 G-s
73	- PUMP CPLG END AXIAL	.037 In/Sec	.051 G-s
81	- PUMP OPP END HORIZ	.025 In/Sec	.135 G-s
82	- PUMP OPP END VERT	.023 In/Sec	.030 G-s

P54-112 - CANNED MOTOR CENTRIFUG PUMP (25-Jun-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.065 In/Sec	.114 G-s
12	- MOTOR OUTBOARD VERT	.027 In/Sec	.042 G-s
13	- MOTOR OUTBOARD AXIAL	.023 In/Sec	.146 G-s
21	- MOTOR INBOARD HORIZ	.051 In/Sec	.189 G-s
22	- MOTOR INBOARD VERT	.056 In/Sec	.223 G-s
71	- PUMP CPLG END HORIZ	.053 In/Sec	.174 G-s
72	- PUMP CPLG END VERT	.023 In/Sec	.074 G-s
81	- PUMP OPP END HORIZ	.072 In/Sec	.183 G-s
82	- PUMP OPP END VERT	.025 In/Sec	.059 G-s
83	- PUMP OPP END AXIAL	.046 In/Sec	.029 G-s

R55-102 - REACTOR AGIT R-102 (25-Jun-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.105 In/Sec	.303 G-s
12	- MOTOR OUTBOARD VERT	.157 In/Sec	.369 G-s
21	- MOTOR INBOARD HORIZ	.104 In/Sec	1.366 G-s
22	- MOTOR INBOARD VERT	.271 In/Sec	.822 G-s
23	- MOTOR INBOARD AXIAL	.245 In/Sec	.275 G-s
31	- GEARBOX INPUT SHAFT-INBD HOR	.114 In/Sec	
32	- GEARBOX INPUT SHAFT INBD VERT	.073 In/Sec	
33	- GEARBOX INPUT SHAFT INBD AXIAL	.158 In/Sec	

41	- GEARBOX INPUT SHAFT OUTBD HOR	.118 In/Sec	
42	- GEARBOX INPUT SHAFT OUTBD VERT	.098 In/Sec	
43	- GEARBOX INPUT SHAFT OUTBD AXIAL	.166 In/Sec	
51	- GEARBOX OUTPUT SHAFT TOP PERP	.085 In/Sec	
53	- GEARBOX OUTPUT SHAFT TOP VERT	.097 In/Sec	
61	- GEARBOX OUTPUT SHAFT MID PERP	.070 In/Sec	
63	- GEARBOX OUTPUT SHAFT MID VERT	.100 In/Sec	

R55-106 - REACTOR AGIT R-106 (25-Jun-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.270 In/Sec	.513 G-s
12	- MOTOR OUTBOARD VERT	.714 In/Sec	.447 G-s
21	- MOTOR INBOARD HORIZ	.408 In/Sec	.402 G-s
22	- MOTOR INBOARD VERT	.360 In/Sec	.301 G-s
23	- MOTOR INBOARD AXIAL	.456 In/Sec	.197 G-s
31	- GEARBOX INPUT SHAFT-INBD HOR	.157 In/Sec	
32	- GEARBOX INPUT SHAFT INBD VERT	.175 In/Sec	
33	- GEARBOX INPUT SHAFT INBD AXIAL	.222 In/Sec	
41	- GEARBOX INPUT SHAFT OUTBD HOR	.271 In/Sec	
42	- GEARBOX INPUT SHAFT OUTBD VERT	.116 In/Sec	
43	- GEARBOX INPUT SHAFT OUTBD AXIAL	.217 In/Sec	
51	- GEARBOX OUTPUT SHAFT TOP PERP	.256 In/Sec	
53	- GEARBOX OUTPUT SHAFT TOP VERT	.112 In/Sec	
61	- GEARBOX OUTPUT SHAFT MID PERP	.157 In/Sec	
63	- GEARBOX OUTPUT SHAFT MID VERT	.121 In/Sec	
71	- GEARBOX OUTPUT SHAFT BOT PERP	.032 In/Sec	

C67-51 - AXIAL TWIN SCREW COMPRESSOR (25-Jun-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.082 In/Sec	4.362 G-s
11P	- MOTOR OUTBOARD PEAKVUE	.044 In/Sec	
12	- MOTOR OUTBOARD VERT	.097 In/Sec	5.329 G-s
13	- MOTOR OUTBOARD AXIAL	.086 In/Sec	3.947 G-s
21	- MOTOR INBOARD HORIZ	.081 In/Sec	3.344 G-s
21P	- MOTOR INBOARD PEAKVUE	.021 In/Sec	
22	- MOTOR INBOARD VERT	.109 In/Sec	4.073 G-s
23	- MOTOR INBOARD AXIAL	.117 In/Sec	1.403 G-s
71	- MALE - CPLG END HORIZ	.106 In/Sec	.569 G-s
72	- MALE - CPLG END VERT	.076 In/Sec	.508 G-s
73	- MALE-CPLG END AXIAL	.099 In/Sec	.914 G-s
81	- MALE- OPP END HORIZ	.131 In/Sec	.851 G-s
81P	- COMPRESSOR INPUT OUTBOAR PEAKVUE	.0029 In/Sec	
82	- MALE- OPP END VERT	.122 In/Sec	.878 G-s
83	- MALE-OPP END AXIAL	.126 In/Sec	.695 G-s
71F	- FEMALE - CPLG END HORIZ	.181 In/Sec	.482 G-s
7FP	- COMPRESS INPUT OUTBOARD PEAKVUE	.0065 In/Sec	
72F	- FEMALE- CPLG END VERT	.125 In/Sec	.544 G-s
73F	- FEMALE-CPLG END AXIAL	.112 In/Sec	.664 G-s
81F	- FEMALE- OPP END HORIZ	.218 In/Sec	.696 G-s
8FP	- COMPRESS OUTPUT OUTBOARD PEAKVUE	.0057 In/Sec	
82F	- FEMALE- OPP END VERT	.108 In/Sec	.507 G-s
83F	- FEMALE- OPP END AXIAL	.122 In/Sec	.376 G-s

P67-54 - HOT OIL CIRC PMP CENT 15HP (25-Jun-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.089 In/Sec	.123 G-s
12	- MOTOR OUTBOARD VERT	.018 In/Sec	.031 G-s

13	- MOTOR OUTBOARD AXIAL	.032 In/Sec	.035 G-s
21	- MOTOR INBOARD HORIZ	.071 In/Sec	.208 G-s
22	- MOTOR INBOARD VERT	.032 In/Sec	.294 G-s
23	- MOTOR INBOARD AXIAL	.030 In/Sec	.064 G-s
71	- PUMP CPLG END HORIZ	.057 In/Sec	.301 G-s
72	- PUMP CPLG END VERT	.061 In/Sec	.112 G-s
73	- PUMP CPLG END AXIAL	.038 In/Sec	.210 G-s
81	- PUMP OPP END HORIZ	.049 In/Sec	.265 G-s
82	- PUMP OPP END VERT	.035 In/Sec	.143 G-s

P67-504 - HOT OIL CIRC PMP CENT 50HP (25-Jun-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.029 In/Sec	.132 G-s
12	- MOTOR OUTBOARD VERT	.023 In/Sec	.168 G-s
13	- MOTOR OUTBOARD AXIAL	.062 In/Sec	.115 G-s
21	- MOTOR INBOARD HORIZ	.040 In/Sec	.279 G-s
22	- MOTOR INBOARD VERT	.024 In/Sec	.197 G-s
23	- MOTOR INBOARD AXIAL	.070 In/Sec	.158 G-s
71	- PUMP CPLG END HORIZ	.206 In/Sec	.122 G-s
72	- PUMP CPLG END VERT	.070 In/Sec	.190 G-s
73	- PUMP CPLG END AXIAL	.071 In/Sec	.147 G-s
81	- PUMP OPP END HORIZ	.065 In/Sec	.157 G-s
82	- PUMP OPP END VERT	.061 In/Sec	.177 G-s

R80-10 - AGITATOR GBX (25-Jun-20)

		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.079 In/Sec
12	- MOTOR OUTBOARD VERT	.102 In/Sec
21	- MOTOR INBOARD HORIZ	.055 In/Sec
22	- MOTOR INBOARD VERT	.058 In/Sec
23	- MOTOR INBOARD AXIAL	.054 In/Sec
31	- GEARBOX INPUT SHAFT-INBD HOR	.044 In/Sec
32	- GEARBOX INPUT SHAFT INBD VERT	.048 In/Sec
33	- GEARBOX INPUT SHAFT INBD AXIAL	.041 In/Sec
41	- GEARBOX INPUT SHAFT OUTBD HOR	.055 In/Sec
42	- GEARBOX INPUT SHAFT OUTBD VERT	.047 In/Sec
43	- GEARBOX INPUT SHAFT OUTBD AXIAL	.041 In/Sec
51	- GEARBOX OUTPUT SHAFT TOP N-S	.043 In/Sec
52	- GEARBOX OUTPUT SHAFT TOP E-W	.062 In/Sec
53	- GEARBOX OUTPUT SHAFT TOP VERT	.031 In/Sec
61	- GEARBOX OUTPUT SHAFT MID N-S	.035 In/Sec
62	- GEARBOX OUTPUT SHAFT MID E-W	.077 In/Sec
63	- GEARBOX OUTPUT SHAFT MID VERT	.032 In/Sec

B82-101A - FAN FORCED DRAFT 10HP SOUTH (25-Jun-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.094 In/Sec	.137 G-s
12	- MOTOR OUTBOARD VERT	.110 In/Sec	.125 G-s
21	- MOTOR INBOARD HORIZ	.174 In/Sec	.128 G-s
22	- MOTOR INBOARD VERT	.240 In/Sec	.174 G-s
23	- MOTOR INBOARD AXIAL	.270 In/Sec	.101 G-s

B82-102 - INDUCED DRAFT 150 HP (25-Jun-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.036 In/Sec	.018 G-s
12	- MOTOR OUTBOARD VERT	.030 In/Sec	.051 G-s
21	- MOTOR INBOARD HORIZ	.032 In/Sec	.175 G-s

22	- MOTOR INBOARD VERT	.046 In/Sec	.133 G-s
23	- MOTOR INBOARD AXIAL	.034 In/Sec	.127 G-s
31	- FAN INBOARD HORIZONTAL	.027 In/Sec	.351 G-s
41	- FAN OUTBOARD HORIZONTAL	.022 In/Sec	.246 G-s

CHLR67-1W - 240T TRANE CHILLER WEST (25-Jun-20)

		OVERALL LEVEL
11	- HOTOR OUTBOARD HORIZ	.144 In/Sec
12	- HOTOR OUTBOARD VERT	.174 In/Sec
13	- HOTOR OUTBOARD AXIAL	.090 In/Sec
21	- HOTOR INBOARD HORIZ	.138 In/Sec
22	- HOTOR INBOARD VERT	.140 In/Sec
23	- HOTOR INBOARD AXIAL	.120 In/Sec
71	- COMP INBOARD HORIZ	.074 In/Sec
72	- COMP INBOARD VERT	.119 In/Sec
73	- COMP INBOARD AXIAL	.158 In/Sec
81	- COMP OUTBD HORIZ	.131 In/Sec
82	- COMP OUTBD VERT	.167 In/Sec
83	- COMP OUTBD AXIAL	.148 In/Sec

CHLR67-1E - 240T TRANE CHILLER EAST (25-Jun-20)

		OVERALL LEVEL
11	- HOTOR OUTBOARD HORIZ	.134 In/Sec
12	- HOTOR OUTBOARD VERT	.170 In/Sec
13	- HOTOR OUTBOARD AXIAL	.153 In/Sec
21	- HOTOR INBOARD HORIZ	.123 In/Sec
22	- HOTOR INBOARD VERT	.170 In/Sec
23	- HOTOR INBOARD AXIAL	.212 In/Sec
71	- COMP INBOARD HORIZ	.135 In/Sec
72	- COMP INBOARD VERT	.206 In/Sec
73	- COMP INBOARD AXIAL	.288 In/Sec
81	- COMP OUTBD HORIZ	.251 In/Sec
82	- COMP OUTBD VERT	.219 In/Sec
83	- COMP OUTBD AXIAL	.168 In/Sec

Clarification Of Vibration Units:

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