

August 28, 2020

Penn A Kem

Subject: August 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,

David W. Shook
Senior Reliability Specialists
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Detailed Defects

P4C-102A Boiler Feed Water Pump

The pump now seems to be running well now after recent repairs. We suspect slight cavitation in the unit now but have no immediate concerns.

R80-30 Reactor Agitator Motor and Gearbox

The motor shaft speed vibration continues to be very high at near 1"/sec velocity peak in the data. 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

A moderate shaft speed vibration still exists in the axial plane for the pump drive end bearing after repairs. We still suspect one or more of the following: bent shaft, rotor out of balance, eccentric coupling hub, worn insert, soft foot, structural problems, or an alignment issue. Inspect unit soon.

Rated a Class II Defect

B76 ID Fan East H2 Plant

Data for this unit was last acquired in December. It appears it could be dirty and out of balance after sitting so long. Recommend complete cleaning and inspection. Ensure belts are serviceable and the sheaves are aligned. **Rated a Class II Defect.**

Observations

Axial Twin Screw Compressor C67-51

Motor vibration data shows two issues. Harmonics of shaft speed could indicate looseness in the bearings or fits. There is also a non-synchronous vibration peak with multiple harmonics (these are marked). They could indicate bearing race or rolling element defects. Compressor shows harmonics of lobe pass throughout the unit. We are going to rate the **Motor A Class II Defect for now** and the **Compressor A Class I**.

P24-63 Degree Pump North

The pump axial vibrations still 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 II Defect.**

R48-2 Reactor Agitator

The apparent bent agitator shaft is still causing distress in the drive components. Motor top bearing vibration is above 0.3"/sec velocity peak. **Rated a Class II Defect.**

R53-301 Reactor Agitator

The motor inboard axial is at 0.45"/sec velocity peak. Inspect the motor and coupling, and check the shaft alignment, fasteners and frame as time allows. **Rated a Class II Defect.**

Big Blue Water Pump P24-BigBlue

The pump data still indicates possible slight looseness in the bearing fits as well as wear in the pump. The motor data shows slight bearing frequency defects and harmonics, as well as vane pass: which we suspect is 5x RPM. No immediate actions are required at this time. **Rated a Class I Defect.**

CHLR45-1 20 Ton Trane Chiller

The East compressor is still 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.**

Not Running this Survey but reported previously as shown below:

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 0.35"/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.**

R55-106 Reactor Agitator Motor Gearbox

Slight drop in 1x RPM sinusoidal vibration for the outboard vertical of the motor this survey. 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.**

Overall vibrations

Abbreviated Last Measurement Summary *****

Database: penn.rbm
Station: NEW EQUIPMENT
Report Date: 28-Aug-20 14:06

MEASUREMENT POINT -----	OVERALL LEVEL -----	HFD / VHFD -----
B4C101-877 - ZURN BOILER BLOWER		
	(27-Aug-20)	
	OVERALL LEVEL	1-20 KHZ
11 - MOTOR OUTBOARD HORIZ	.161 In/Sec	.234 G-s
12 - MOTOR OUTBOARD VERT	.146 In/Sec	.868 G-s
21 - MOTOR INBOARD HORIZ	.155 In/Sec	2.088 G-s
22 - MOTOR INBOARD VERT	.132 In/Sec	1.670 G-s
23 - MOTOR INBOARD AXIAL	.109 In/Sec	.633 G-s
71 - BLOWER INBOARD HORIZ	.161 In/Sec	.851 G-s
72 - BLOWER INBOARD VERT	.107 In/Sec	.706 G-s
81 - BLOWER WHEEL END HORIZ	.151 In/Sec	.834 G-s
82 - BLOWER WHEEL END VERT	.108 In/Sec	.325 G-s
P4C-102A - BOILER FEEDWATER PUMP		
	(27-Aug-20)	
	OVERALL LEVEL	1-20 KHZ
11 - MOTOR OUTBOARD HORIZ	.053 In/Sec	.909 G-s
12 - MOTOR OUTBOARD VERT	.076 In/Sec	.837 G-s
21 - MOTOR INBOARD HORIZ	.109 In/Sec	1.327 G-s
22 - MOTOR INBOARD VERT	.116 In/Sec	1.906 G-s
23 - MOTOR INBOARD AXIAL	.130 In/Sec	1.346 G-s
71 - PUMP CPLG END HORIZ	.174 In/Sec	.526 G-s
72 - PUMP CPLG END VERT	.038 In/Sec	.393 G-s
73 - PUMP CPLG END AXIAL	.196 In/Sec	.572 G-s
81 - PUMP OPP END HORIZ	.116 In/Sec	1.045 G-s
82 - PUMP OPP END VERT	.039 In/Sec	.955 G-s
83 - PUMP OPP END AXIAL	.190 In/Sec	1.252 G-s
P24-63DEGN - 63 DEG N WATER PUMP		
	(27-Aug-20)	
	OVERALL LEVEL	1-20 KHZ
11 - MOTOR OUTBOARD HORIZ	.057 In/Sec	.435 G-s
12 - MOTOR OUTBOARD VERT	.037 In/Sec	.535 G-s
21 - MOTOR INBOARD HORIZ	.071 In/Sec	.427 G-s
22 - MOTOR INBOARD VERT	.055 In/Sec	.606 G-s
23 - MOTOR INBOARD AXIAL	.047 In/Sec	.682 G-s
71 - PUMP CPLG END HORIZ	.078 In/Sec	1.024 G-s
72 - PUMP CPLG END VERT	.038 In/Sec	1.589 G-s
73 - PUMP CPLG END AXIAL	.174 In/Sec	4.384 G-s
81 - PUMP OPP END HORIZ	.090 In/Sec	.823 G-s
82 - PUMP OPP END VERT	.041 In/Sec	1.552 G-s
83 - PUMP OPP END AXIAL	.173 In/Sec	3.083 G-s
P24-63DEGS - 63 DEG S WATER PUMP		
	(27-Aug-20)	
	OVERALL LEVEL	1-20 KHZ
11 - MOTOR OUTBOARD HORIZ	.189 In/Sec	.378 G-s

12	- MOTOR OUTBOARD VERT	.076 In/Sec	.573 G-s
21	- MOTOR INBOARD HORIZ	.207 In/Sec	.652 G-s
22	- MOTOR INBOARD VERT	.060 In/Sec	1.174 G-s
23	- MOTOR INBOARD AXIAL	.124 In/Sec	.366 G-s
71	- PUMP CPLG END HORIZ	.104 In/Sec	.261 G-s
72	- PUMP CPLG END VERT	.079 In/Sec	.625 G-s
73	- PUMP CPLG END AXIAL	.065 In/Sec	1.525 G-s
81	- PUMP OPP END HORIZ	.054 In/Sec	.484 G-s
82	- PUMP OPP END VERT	.055 In/Sec	.463 G-s
83	- PUMP OPP END AXIAL	.154 In/Sec	1.809 G-s

P24-85DEGN - 85 DEG N WATER CIRC PUMP 125 (27-Aug-20)

	OVERALL LEVEL	1-20 KHZ
11 - MOTOR OUTBOARD HORIZ	.084 In/Sec	.833 G-s
12 - MOTOR OUTBOARD VERT	.100 In/Sec	2.314 G-s
21 - MOTOR INBOARD HORIZ	.138 In/Sec	3.085 G-s
22 - MOTOR INBOARD VERT	.054 In/Sec	1.008 G-s
23 - MOTOR INBOARD AXIAL	.035 In/Sec	.544 G-s
71 - PUMP CPLG END HORIZ	.074 In/Sec	.796 G-s
72 - PUMP CPLG END VERT	.381 In/Sec	1.177 G-s
73 - PUMP CPLG END AXIAL	.475 In/Sec	.864 G-s
81 - PUMP OPP END HORIZ	.141 In/Sec	1.292 G-s
82 - PUMP OPP END VERT	.134 In/Sec	1.157 G-s
83 - PUMP OPP END AXIAL	.381 In/Sec	1.353 G-s

P24BGBL876 - BIG BLUE WATER PUMP-63 DEG (27-Aug-20)

	OVERALL LEVEL	1-20 KHZ
11 - MOTOR OUTBOARD HORIZ	.179 In/Sec	1.495 G-s
12 - MOTOR OUTBOARD VERT	.061 In/Sec	1.282 G-s
21 - MOTOR INBOARD HORIZ	.233 In/Sec	3.194 G-s
22 - MOTOR INBOARD VERT	.061 In/Sec	2.835 G-s
23 - MOTOR INBOARD AXIAL	.141 In/Sec	3.418 G-s
71 - PUMP CPLG END HORIZ	.302 In/Sec	.464 G-s
72 - PUMP CPLG END VERT	.158 In/Sec	.697 G-s
73 - PUMP CPLG END AXIAL	.261 In/Sec	.174 G-s
81 - PUMP OPP END HORIZ	.248 In/Sec	.885 G-s
82 - PUMP OPP END VERT	.204 In/Sec	.826 G-s
83 - PUMP OPP END AXIAL	.140 In/Sec	.434 G-s

P36-905A - N COOL TWR-NORTH PUMP (27-Aug-20)

	OVERALL LEVEL	1-20 KHZ
11 - MOTOR OUTBOARD HORIZ	.071 In/Sec	.225 G-s
12 - MOTOR OUTBOARD VERT	.042 In/Sec	.169 G-s
21 - MOTOR INBOARD HORIZ	.063 In/Sec	1.044 G-s
22 - MOTOR INBOARD VERT	.061 In/Sec	.445 G-s
23 - MOTOR INBOARD AXIAL	.075 In/Sec	.420 G-s
71 - PUMP CPLG END HORIZ	.076 In/Sec	1.064 G-s
72 - PUMP CPLG END VERT	.060 In/Sec	1.218 G-s
73 - PUMP CPLG END AXIAL	.123 In/Sec	.266 G-s
81 - PUMP OPP END HORIZ	.092 In/Sec	.952 G-s
82 - PUMP OPP END VERT	.071 In/Sec	1.031 G-s
83 - PUMP OPP END AXIAL	.157 In/Sec	1.680 G-s

P36-905C - N COOL TWR-EAST PUMP (27-Aug-20)

	OVERALL LEVEL	1-20 KHZ
11 - MOTOR OUTBOARD HORIZ	.040 In/Sec	.093 G-s
12 - MOTOR OUTBOARD VERT	.037 In/Sec	.308 G-s

21	- MOTOR INBOARD HORIZ	.077 In/Sec	.522 G-s
22	- MOTOR INBOARD VERT	.027 In/Sec	.148 G-s
23	- MOTOR INBOARD AXIAL	.030 In/Sec	.085 G-s
71	- PUMP CPLG END HORIZ	.078 In/Sec	.730 G-s
72	- PUMP CPLG END VERT	.097 In/Sec	.865 G-s
73	- PUMP CPLG END AXIAL	.142 In/Sec	.304 G-s
81	- PUMP OPP END HORIZ	.117 In/Sec	.767 G-s
82	- PUMP OPP END VERT	.107 In/Sec	.984 G-s
83	- PUMP OPP END AXIAL	.109 In/Sec	1.995 G-s

C36-EAST - UTILITY AIRCOMP ROTARY 200HP (27-Aug-20)

	OVERALL LEVEL	1-20 KHZ
11 - MOTOR OUTBOARD HORIZ	.052 In/Sec	.514 G-s
12 - MOTOR OUTBOARD VERT	.062 In/Sec	1.225 G-s
21 - MOTOR INBOARD HORIZ	.089 In/Sec	1.077 G-s
22 - MOTOR INBOARD VERT	.078 In/Sec	1.349 G-s
23 - MOTOR INBOARD AXIAL	.078 In/Sec	1.573 G-s
71 - MALE - CPLG END HORIZ	.121 In/Sec	2.666 G-s
72 - MALE - CPLG END VERT	.093 In/Sec	1.373 G-s
73 - MALE-CPLG END AXIAL	.153 In/Sec	1.394 G-s
81 - MALE- OPP END HORIZ	.126 In/Sec	4.674 G-s
82 - MALE- OPP END VERT	.142 In/Sec	2.085 G-s
71F - FEMALE - CPLG END HORIZ	.160 In/Sec	.595 G-s
72F - FEMALE- CPLG END VERT	.095 In/Sec	1.697 G-s
81F - FEMALE- OPP END HORIZ	.097 In/Sec	1.303 G-s
82F - FEMALE- OPP END VERT	.118 In/Sec	.835 G-s

C36-WEST - UTILITY AIRCOMP ROTARY 150HP (27-Aug-20)

	OVERALL LEVEL	1-20 KHZ
11 - MOTOR OUTBOARD HORIZ	.069 In/Sec	2.257 G-s
12 - MOTOR OUTBOARD VERT	.053 In/Sec	1.145 G-s
21 - MOTOR INBOARD HORIZ	.088 In/Sec	.736 G-s
22 - MOTOR INBOARD VERT	.059 In/Sec	.903 G-s
23 - MOTOR INBOARD AXIAL	.109 In/Sec	1.014 G-s
71 - MALE - CPLG END HORIZ	.085 In/Sec	.908 G-s
72 - MALE - CPLG END VERT	.075 In/Sec	1.736 G-s
73 - MALE-CPLG END AXIAL	.200 In/Sec	3.045 G-s
81 - MALE- OPP END HORIZ	.068 In/Sec	.996 G-s
82 - MALE- OPP END VERT	.073 In/Sec	1.258 G-s
71F - FEMALE - CPLG END HORIZ	.073 In/Sec	1.174 G-s
72F - FEMALE- CPLG END VERT	.079 In/Sec	1.982 G-s
81F - FEMALE- OPP END HORIZ	.073 In/Sec	1.291 G-s
82F - FEMALE- OPP END VERT	.117 In/Sec	1.848 G-s

P39-4-877 - WELL PUMP #4

(27-Aug-20)

	OVERALL LEVEL	1-20 KHZ
11 - MOTOR TOP N-S	.242 In/Sec	.512 G-s
12 - MOTOR TOP E-W	.211 In/Sec	.521 G-s
13 - MOTOR TOP VERT	.046 In/Sec	.482 G-s
21 - MOTOR BOTTOM N-S	.132 In/Sec	.757 G-s
22 - MOTOR BOTTOM E-W	.110 In/Sec	.222 G-s

C42-4 - AXIAL TWIN SCREW COMPRESSOR (27-Aug-20)

	OVERALL LEVEL	1-20 KHZ
11 - MOTOR OUTBOARD HORIZ	.116 In/Sec	1.159 G-s
12 - MOTOR OUTBOARD VERT	.065 In/Sec	1.595 G-s
13 - MOTOR OUTBOARD AXIAL	.096 In/Sec	.508 G-s

21	- MOTOR INBOARD HORIZ	.112 In/Sec	.399 G-s
22	- MOTOR INBOARD VERT	.086 In/Sec	.546 G-s
23	- MOTOR INBOARD AXIAL	.099 In/Sec	.356 G-s
71	- MALE - CPLG END HORIZ	.097 In/Sec	.594 G-s
72	- MALE - CPLG END VERT	.060 In/Sec	.760 G-s
73	- MALE-CPLG END AXIAL	.044 In/Sec	.845 G-s
81	- MALE- OPP END HORIZ	.083 In/Sec	.346 G-s
82	- MALE- OPP END VERT	.043 In/Sec	.248 G-s
83	- MALE-OPP END AXIAL	.058 In/Sec	.373 G-s
71F	- FEMALE - CPLG END HORIZ	.116 In/Sec	.706 G-s
72F	- FEMALE- CPLG END VERT	.050 In/Sec	.447 G-s
73F	- FEMALE-CPLG END AXIAL	.079 In/Sec	.881 G-s
81F	- FEMALE- OPP END HORIZ	.098 In/Sec	.505 G-s
82F	- FEMALE- OPP END VERT	.054 In/Sec	.370 G-s
83F	- FEMALE- OPP END AXIAL	.071 In/Sec	.466 G-s

P42-4A - CENTRIFUGAL HOT OIL PUMP 5HP (27-Aug-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.023 In/Sec	.100 G-s
21	- MOTOR INBOARD HORIZ	.026 In/Sec	.068 G-s
23	- MOTOR INBOARD AXIAL	.037 In/Sec	.060 G-s
71	- PUMP COUPLING END HORIZ	.029 In/Sec	.526 G-s
73	- PUMP COUPLING END AXIAL	.020 In/Sec	.219 G-s
81	- PUMP IMPELLER END HORIZ	.027 In/Sec	.307 G-s

P42-4B - CENTRIFUGAL HOT OIL PUMP 5HP (27-Aug-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.030 In/Sec	.063 G-s
21	- MOTOR INBOARD HORIZ	.025 In/Sec	.124 G-s
23	- MOTOR INBOARD AXIAL	.062 In/Sec	.059 G-s
71	- PUMP COUPLING END HORIZ	.041 In/Sec	.193 G-s
73	- PUMP COUPLING END AXIAL	.014 In/Sec	.085 G-s
81	- PUMP IMPELLER END HORIZ	.023 In/Sec	.093 G-s

P48-7B - ROTOJET HIGH PRESS PUMP 15HP (27-Aug-20)

		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.109 In/Sec	.405 G-s
12	- MOTOR OUTBOARD VERT	.251 In/Sec	.375 G-s
21	- MOTOR INBOARD HORIZ	.119 In/Sec	1.290 G-s
22	- MOTOR INBOARD VERT	.180 In/Sec	.912 G-s
23	- MOTOR INBOARD AXIAL	.269 In/Sec	.326 G-s
71	- PUMP CPLG END HORIZ	.299 In/Sec	1.161 G-s
72	- PUMP CPLG END VERT	.204 In/Sec	1.468 G-s
73	- PUMP CPLG END AXIAL	.186 In/Sec	.923 G-s
81	- PUMP OPP END HORIZ	.276 In/Sec	.878 G-s
82	- PUMP OPP END VERT	.220 In/Sec	.686 G-s

R48-2 - AGITATOR GEARBOX FAULK 15HP (27-Aug-20)

		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.307 In/Sec
12	- MOTOR OUTBOARD VERT	.240 In/Sec
21	- MOTOR INBOARD HORIZ	.194 In/Sec
22	- MOTOR INBOARD VERT	.182 In/Sec
23	- MOTOR INBOARD AXIAL	.061 In/Sec
31	- GEARBOX INPUT SHAFT-INBD HOR	.150 In/Sec
32	- GEARBOX INPUT SHAFT INBD VERT	.156 In/Sec
41	- GEARBOX INPUT SHAFT OUTBD HOR	.135 In/Sec

42	- GEARBOX INPUT SHAFT OUTBD VERT	.133 In/Sec
43	- GEARBOX INPUT SHAFT OUTBD AXIAL	.045 In/Sec
51	- GEARBOX OUTPUT SHAFT TOP N-S	.093 In/Sec

C53-301B - C-301B RECIP COMPRESSOR

(27-Aug-20)

	OVERALL LEVEL	1-20 KHZ
11 - MOTOR OUTBOARD HORIZ	.056 In/Sec	2.300 G-s
12 - MOTOR OUTBOARD VERT	.043 In/Sec	1.252 G-s
21 - MOTOR INBOARD HORIZ	.054 In/Sec	.646 G-s
22 - MOTOR INBOARD VERT	.093 In/Sec	1.610 G-s
23 - MOTOR INBOARD AXIAL	.058 In/Sec	.258 G-s
71 - CRANKSHAFT DRIVE END HORIZ	.050 In/Sec	.074 G-s
72 - CRANKSHAFT DRIVE END VERT	.040 In/Sec	.078 G-s
73 - CRANKSHAFT DRIVE END AXIAL	.133 In/Sec	.103 G-s
81 - CRANKSHAFT OPP END HORIZ	.055 In/Sec	.051 G-s
82 - CRANKSHAFT OPP END VERT	.037 In/Sec	.068 G-s

P53-301 - ANSI CENTRIFUGAL PUMP 50 HP

(27-Aug-20)

	OVERALL LEVEL	1-20 KHZ
11 - MOTOR OUTBOARD HORIZ	.090 In/Sec	.148 G-s
12 - MOTOR OUTBOARD VERT	.128 In/Sec	.156 G-s
21 - MOTOR INBOARD HORIZ	.133 In/Sec	.374 G-s
22 - MOTOR INBOARD VERT	.098 In/Sec	.333 G-s
23 - MOTOR INBOARD AXIAL	.091 In/Sec	.458 G-s
71 - PUMP CPLG END HORIZ	.105 In/Sec	.516 G-s
72 - PUMP CPLG END VERT	.124 In/Sec	.482 G-s
73 - PUMP CPLG END AXIAL	.115 In/Sec	.723 G-s
81 - PUMP OPP END HORIZ	.079 In/Sec	.977 G-s
82 - PUMP OPP END VERT	.090 In/Sec	.521 G-s

R53-301 - AGITATOR GBX CHEMINEER 15HP

(27-Aug-20)

	OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZ	.377 In/Sec
12 - MOTOR OUTBOARD VERT	.254 In/Sec
21 - MOTOR INBOARD HORIZ	.323 In/Sec
22 - MOTOR INBOARD VERT	.325 In/Sec
23 - MOTOR INBOARD AXIAL	.443 In/Sec
31 - GEARBOX INPUT SHAFT-INBD HOR	.249 In/Sec
32 - GEARBOX INPUT SHAFT INBD VERT	.079 In/Sec
33 - GEARBOX INPUT SHAFT INBD AXIAL	.206 In/Sec
41 - GEARBOX INPUT SHAFT OUTBD HOR	.198 In/Sec
42 - GEARBOX INPUT SHAFT OUTBD VERT	.072 In/Sec
51 - GEARBOX OUTPUT SHAFT TOP N-S	.242 In/Sec
52 - GEARBOX OUTPUT SHAFT TOP E-W	.035 In/Sec
61 - GEARBOX OUTPUT SHAFT MID N-S	.151 In/Sec
62 - GEARBOX OUTPUT SHAFT MID E-W	.066 In/Sec
71 - GEARBOX OUTPUT SHAFT BOT N-S	.026 In/Sec

P53-310A - GRUNDFOSS VERT PUMP 10HP

(27-Aug-20)

	OVERALL LEVEL	1-20 KHZ
11 - MOTOR OUTBOARD HORIZ	.107 In/Sec	.080 G-s
12 - MOTOR OUTBOARD VERT	.139 In/Sec	.090 G-s
21 - MOTOR INBOARD HORIZ	.025 In/Sec	.261 G-s
22 - MOTOR INBOARD VERT	.078 In/Sec	.0034 G-s
23 - MOTOR INBOARD AXIAL	.038 In/Sec	.325 G-s
71 - PUMP CPLG END HORIZ	.089 In/Sec	.153 G-s
72 - PUMP CPLG END VERT	.123 In/Sec	.152 G-s

81	- PUMP OPP END HORIZ	.078 In/Sec	.087 G-s
82	- PUMP OPP END VERT	.013 In/Sec	.099 G-s

C54--115	- COMP 2CYL 2 STAGE 75 HP	(27-Aug-20)	
		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.083 In/Sec	.722 G-s
12	- MOTOR OUTBOARD VERT	.124 In/Sec	.222 G-s
21	- MOTOR INBOARD HORIZ	.067 In/Sec	1.175 G-s
22	- MOTOR INBOARD VERT	.060 In/Sec	.480 G-s
23	- MOTOR INBOARD AXIAL	.169 In/Sec	.240 G-s
71	- PUMP CPLG END HORIZ	.023 In/Sec	.032 G-s
72	- PUMP CPLG END VERT	.024 In/Sec	.022 G-s
73	- PUMP CPLG END AXIAL	.035 In/Sec	.046 G-s
81	- PUMP OPP END HORIZ	.034 In/Sec	.031 G-s
82	- PUMP OPP END VERT	.023 In/Sec	.037 G-s

P54-112	- CANNED MOTOR CENTRIFUG PUMP	(27-Aug-20)	
		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.047 In/Sec	.028 G-s
12	- MOTOR OUTBOARD VERT	.026 In/Sec	.036 G-s
13	- MOTOR OUTBOARD AXIAL	.054 In/Sec	.272 G-s
21	- MOTOR INBOARD HORIZ	.039 In/Sec	.188 G-s
22	- MOTOR INBOARD VERT	.018 In/Sec	.250 G-s
71	- PUMP CPLG END HORIZ	.066 In/Sec	.169 G-s
72	- PUMP CPLG END VERT	.019 In/Sec	.203 G-s
81	- PUMP OPP END HORIZ	.075 In/Sec	.118 G-s
82	- PUMP OPP END VERT	.023 In/Sec	.113 G-s

C67-51	- AXIAL TWIN SCREW COMPRESSOR	(27-Aug-20)	
		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.114 In/Sec	4.701 G-s
11P	- MOTOR OUTBOARD PEAKVUE	.022 In/Sec	
12	- MOTOR OUTBOARD VERT	.175 In/Sec	5.581 G-s
13	- MOTOR OUTBOARD AXIAL	.163 In/Sec	4.285 G-s
21	- MOTOR INBOARD HORIZ	.114 In/Sec	2.833 G-s
21P	- MOTOR INBOARD PEAKVUE	.012 In/Sec	
22	- MOTOR INBOARD VERT	.112 In/Sec	5.207 G-s
23	- MOTOR INBOARD AXIAL	.124 In/Sec	2.629 G-s
71	- MALE - CPLG END HORIZ	.302 In/Sec	.509 G-s
72	- MALE - CPLG END VERT	.132 In/Sec	.326 G-s
73	- MALE-CPLG END AXIAL	.186 In/Sec	.081 G-s
81	- MALE- OPP END HORIZ	.216 In/Sec	.088 G-s
82	- MALE- OPP END VERT	.264 In/Sec	.020 G-s
83	- MALE-OPP END AXIAL	.267 In/Sec	.193 G-s
71F	- FEMALE - CPLG END HORIZ	.391 In/Sec	.291 G-s
72F	- FEMALE- CPLG END VERT	.322 In/Sec	.318 G-s
73F	- FEMALE-CPLG END AXIAL	.270 In/Sec	1.630 G-s
81F	- FEMALE- OPP END HORIZ	.195 In/Sec	.367 G-s
82F	- FEMALE- OPP END VERT	.181 In/Sec	.269 G-s
83F	- FEMALE- OPP END AXIAL	.317 In/Sec	.890 G-s

P67-54	- HOT OIL CIRC PMP CENT 15HP	(27-Aug-20)	
		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.068 In/Sec	.329 G-s
12	- MOTOR OUTBOARD VERT	.027 In/Sec	.112 G-s
21	- MOTOR INBOARD HORIZ	.068 In/Sec	.204 G-s
22	- MOTOR INBOARD VERT	.014 In/Sec	.195 G-s

23	- MOTOR INBOARD AXIAL	.055 In/Sec	.022 G-s
71	- PUMP CPLG END HORIZ	.079 In/Sec	.088 G-s
72	- PUMP CPLG END VERT	.037 In/Sec	.317 G-s
73	- PUMP CPLG END AXIAL	.049 In/Sec	.348 G-s
81	- PUMP OPP END HORIZ	.118 In/Sec	.333 G-s
82	- PUMP OPP END VERT	.021 In/Sec	.200 G-s

P67-504 - HOT OIL CIRC PMP CENT 50HP		(27-Aug-20)	
		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.026 In/Sec	.139 G-s
12	- MOTOR OUTBOARD VERT	.025 In/Sec	.470 G-s
21	- MOTOR INBOARD HORIZ	.039 In/Sec	.228 G-s
22	- MOTOR INBOARD VERT	.032 In/Sec	.197 G-s
23	- MOTOR INBOARD AXIAL	.079 In/Sec	.111 G-s
71	- PUMP CPLG END HORIZ	.090 In/Sec	.143 G-s
72	- PUMP CPLG END VERT	.050 In/Sec	.148 G-s
73	- PUMP CPLG END AXIAL	.054 In/Sec	.147 G-s
81	- PUMP OPP END HORIZ	.043 In/Sec	.174 G-s
82	- PUMP OPP END VERT	.039 In/Sec	.063 G-s

B76-101806 - FD FAN- EAST H2 PLANT		(27-Aug-20)	
		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.142 In/Sec	.415 G-s
12	- MOTOR OUTBOARD VERT	.227 In/Sec	.186 G-s
21	- MOTOR INBOARD HORIZ	.133 In/Sec	.296 G-s
22	- MOTOR INBOARD VERT	.367 In/Sec	.275 G-s
23	- MOTOR INBOARD AXIAL	.277 In/Sec	.177 G-s
71	- FAN SHEAVE END HORIZ	.200 In/Sec	.248 G-s
72	- FAN SHEAVE END VERT	.425 In/Sec	.405 G-s
73	- FAN SHEAVE END AXIAL	.333 In/Sec	.206 G-s
81	- FAN WHEEL END HORIZ	.164 In/Sec	.522 G-s
82	- FAN WHEEL END VERT	.297 In/Sec	.130 G-s

B76-103806 - ID FAN- EAST H2 PLANT		(27-Aug-20)	
		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.697 In/Sec	.402 G-s
12	- MOTOR OUTBOARD VERT	.185 In/Sec	.251 G-s
21	- MOTOR INBOARD HORIZ	.365 In/Sec	.419 G-s
22	- MOTOR INBOARD VERT	.427 In/Sec	.170 G-s
23	- MOTOR INBOARD AXIAL	.668 In/Sec	.097 G-s
71	- FAN SHEAVE END HORIZ	.577 In/Sec	.298 G-s
81	- FAN WHEEL END HORIZ	.833 In/Sec	.071 G-s

P76-101806 - P101 BFW PUMP-EAST H2 PLANT		(27-Aug-20)	
		OVERALL LEVEL	1-20 KHZ
11	- MOTOR OUTBOARD HORIZ	.132 In/Sec	3.250 G-s
12	- MOTOR OUTBOARD VERT	.113 In/Sec	2.510 G-s
21	- MOTOR INBOARD HORIZ	.040 In/Sec	.202 G-s
22	- MOTOR INBOARD VERT	.060 In/Sec	.161 G-s
23	- MOTOR INBOARD AXIAL	.036 In/Sec	.281 G-s
71	- PUMP CPLG END HORIZ	.051 In/Sec	.198 G-s
72	- PUMP CPLG END VERT	.043 In/Sec	.222 G-s
73	- PUMP CPLG END AXIAL	.046 In/Sec	.345 G-s
81	- PUMP HIGH SPEED HORIZ	.054 In/Sec	.189 G-s
82	- PUMP HIGH SPEED VERT	.024 In/Sec	.157 G-s

P76-103806 - P103 QUENCH PUMP-EAST H2 PLT		(27-Aug-20)	
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	OVERALL LEVEL	1-20 KHZ
11 - MOTOR OUTBOARD HORIZ	.044 In/Sec	.352 G-s
12 - MOTOR OUTBOARD VERT	.032 In/Sec	.195 G-s
21 - MOTOR INBOARD HORIZ	.074 In/Sec	.138 G-s
22 - MOTOR INBOARD VERT	.029 In/Sec	.957 G-s
23 - MOTOR INBOARD AXIAL	.060 In/Sec	.367 G-s

R80-30 - AGITATOR GBX 15HP CHEMINEER (27-Aug-20)		
	OVERALL LEVEL	
11 - MOTOR OUTBOARD HORIZ	.122 In/Sec	
12 - MOTOR OUTBOARD VERT	1.114 In/Sec	
21 - MOTOR INBOARD HORIZ	.156 In/Sec	
22 - MOTOR INBOARD VERT	.426 In/Sec	
23 - MOTOR INBOARD AXIAL	.328 In/Sec	
31 - GEARBOX INPUT SHAFT-INBD HOR	.124 In/Sec	
32 - GEARBOX INPUT SHAFT INBD VERT	.078 In/Sec	
33 - GEARBOX INPUT SHAFT INBD AXIAL	.304 In/Sec	
41 - GEARBOX INPUT SHAFT OUTBD HOR	.085 In/Sec	
42 - GEARBOX INPUT SHAFT OUTBD VERT	.099 In/Sec	
51 - GEARBOX OUTPUT SHAFT TOP N-S	.096 In/Sec	
52 - GEARBOX OUTPUT SHAFT TOP E-W	.078 In/Sec	
61 - GEARBOX OUTPUT SHAFT MID N-S	.075 In/Sec	
62 - GEARBOX OUTPUT SHAFT MID E-W	.099 In/Sec	
71 - GEARBOX OUTPUT SHAFT BOT N-S	.029 In/Sec	

B82-101A - FAN FORCED DRAFT 10HP SOUTH (27-Aug-20)		
	OVERALL LEVEL	1-20 KHZ
11 - MOTOR OUTBOARD HORIZ	.112 In/Sec	.146 G-s
12 - MOTOR OUTBOARD VERT	.192 In/Sec	.104 G-s
21 - MOTOR INBOARD HORIZ	.142 In/Sec	.157 G-s
22 - MOTOR INBOARD VERT	.260 In/Sec	.094 G-s
23 - MOTOR INBOARD AXIAL	.256 In/Sec	.080 G-s

B82-102 - INDUCED DRAFT 150 HP (27-Aug-20)		
	OVERALL LEVEL	1-20 KHZ
11 - MOTOR OUTBOARD HORIZ	.032 In/Sec	.094 G-s
12 - MOTOR OUTBOARD VERT	.032 In/Sec	.086 G-s
21 - MOTOR INBOARD HORIZ	.035 In/Sec	.681 G-s
22 - MOTOR INBOARD VERT	.043 In/Sec	.602 G-s
23 - MOTOR INBOARD AXIAL	.034 In/Sec	.180 G-s
31 - FAN INBOARD HORIZONTAL	.027 In/Sec	.508 G-s
32 - FAN INBOARD VERTICAL	.033 In/Sec	.073 G-s
41 - FAN OUTBOARD HORIZONTAL	.046 In/Sec	.149 G-s
42 - FAN OUTBOARD VERT	.032 In/Sec	.151 G-s

CHLR67-1N - 240T TRANE CHILLER NORTH (27-Aug-20)		
	OVERALL LEVEL	
11 - HOTOR OUTBOARD HORIZ	.115 In/Sec	
12 - HOTOR OUTBOARD VERT	.151 In/Sec	
13 - HOTOR OUTBOARD AXIAL	.088 In/Sec	
21 - HOTOR INBOARD HORIZ	.104 In/Sec	
22 - HOTOR INBOARD VERT	.105 In/Sec	
71 - COMP INBOARD HORIZ	.074 In/Sec	
72 - COMP INBOARD VERT	.070 In/Sec	
81 - COMP OUTBD HORIZ	.109 In/Sec	
82 - COMP OUTBD VERT	.181 In/Sec	
83 - COMP OUTBD AXIAL	.093 In/Sec	

CHLR67-1W	- 240T TRANE CHILLER WEST	(27-Aug-20)
		OVERALL LEVEL
11	- HOTOR OUTBOARD HORIZ	.126 In/Sec
12	- HOTOR OUTBOARD VERT	.176 In/Sec
13	- HOTOR OUTBOARD AXIAL	.117 In/Sec
21	- HOTOR INBOARD HORIZ	.109 In/Sec
22	- HOTOR INBOARD VERT	.140 In/Sec
71	- COMP INBOARD HORIZ	.094 In/Sec
72	- COMP INBOARD VERT	.111 In/Sec
81	- COMP OUTBD HORIZ	.173 In/Sec
82	- COMP OUTBD VERT	.195 In/Sec
83	- COMP OUTBD AXIAL	.116 In/Sec

CHLR67-1E	- 240T TRANE CHILLER EAST	(27-Aug-20)
		OVERALL LEVEL
11	- HOTOR OUTBOARD HORIZ	.088 In/Sec
12	- HOTOR OUTBOARD VERT	.096 In/Sec
13	- HOTOR OUTBOARD AXIAL	.058 In/Sec
21	- HOTOR INBOARD HORIZ	.069 In/Sec
22	- HOTOR INBOARD VERT	.087 In/Sec
71	- COMP INBOARD HORIZ	.065 In/Sec
72	- COMP INBOARD VERT	.069 In/Sec
81	- COMP OUTBD HORIZ	.099 In/Sec
82	- COMP OUTBD VERT	.100 In/Sec
83	- COMP OUTBD AXIAL	.050 In/Sec

CHLR45-1	- 20T TRANE CHILLER	(27-Aug-20)
		OVERALL LEVEL
11W	- WEST MOTOR OUTBOARD HORIZ	.125 In/Sec
12W	- WEST MOTOR OUTBOARD VERT	.273 In/Sec
13W	- WEST MOTOR OUTBOARD AXIAL	.314 In/Sec
11E	- EASTMOTOR OUTBOARD HORIZ	1.358 In/Sec
12E	- EAST MOTOR OUTBOARD VERT	.500 In/Sec
13E	- EAST MOTOR OUTBOARD AXIAL	.231 In/Sec

Clarification Of Vibration Units:

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