

November 22, 2019

Penn A Kem

Subject: November 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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Observations

P24-63DEGN 63 Degree North Water Pump

Both the motor and pump have issues. The motor inboard bearing shows multiple harmonics of shaft speed indicating mechanical looseness. Random impacting in the pump data is usually a good indicator of the presence of bearing defects also. The addition of a large noise hump could help to support the analysis or sometimes it could indicate cavitation in the pump or both. We still suspect the bearings are in some distress with possible cavitation. Replace the motor. Inspect the coupling and outboard pump bearing and check process parameters. **Rated a Class II Defect.**

P24-85DEGS: 85 Degree South Circulating Water Pump

Vibration data still consists of: vane pass and harmonics, slightly elevated noise floor and impacting in the time waveform. We suspect the pump is worn and not running in the optimal area of the performance curve. Have the flow and pressure's checked as time allows. We will watch for changes. **Rated a Class II Defect.**

P24-85DEGN: 85 Degree North Circulating Water Pump

The pump vibration data still consists of noise in the spectrums and impacting in time waveforms. We suspect the pump bearings and fits could be severely worn; however, cavitation can sometimes look similar in the data. There might be a resonance. Inspect the pump and process parameters for issues as time allows. We will watch carefully for changes. **Rated a Class II Defect.**

P48-7B Rotojet Pump (NOT 7A)

This pump still has a high vibration at near 79 Hz. Inspect the pump impeller for wear that would cause imbalance. **Rated a Class II Defect.**

R55-102 Reactor Agitator

The unit gearbox or input coupling could be in severe distress. We recommend an inspection of the drivetrain and oil analysis of the gearbox oil to confirm. Impacting can be seen in the time domain. The gearbox seemed to be generating audible noises too; which also concerns us. Inspect as soon as practical. **Rated a Class II Defect.**

B76-101 FD Fan East

The motor and fan still have vibrations at around 0.5"/sec velocity peak at near 43 Hz. Harmonics are also present in the fan bearings. Inspect the belts and sheaves for wear. Check all fasteners. Perform a lift check on the fan shaft to determine if there is excessive clearances. Replace worn or damaged parts. **Rated a Class II Defect.**

B82-101A FD Fan South

Motor axial is still slightly high. Inspect the unit and clean the wheel. **Rated a Class I Defect.**

CHLR45-1 20 Ton Trane Chiller

The East and West pump vibrations at the top horizontals are still around 1"/sec velocity peak. We will watch for changes. **Rated a Class I Defect.**

Overall vibrations

Abbreviated Last Measurement Summary *****

Database: penn.rbm
Station: NEW EQUIPMENT
Report Date: 22-Nov-19 10:21

MEASUREMENT POINT -----	OVERALL LEVEL -----	HFD / VHFD -----
B4C101-877 - ZURN BOILER BLOWER	(13-Nov-19)	
	OVERALL LEVEL	
11 - MOTOR OUTBOARD HORIZ	.176 In/Sec	
12 - MOTOR OUTBOARD VERT	.151 In/Sec	
21 - MOTOR INBOARD HORIZ	.162 In/Sec	
22 - MOTOR INBOARD VERT	.076 In/Sec	
23 - MOTOR INBOARD AXIAL	.092 In/Sec	
71 - BLOWER INBOARD HORIZ	.143 In/Sec	
72 - BLOWER INBOARD VERT	.108 In/Sec	
73 - BLOWER INBOARD AXIAL	.141 In/Sec	
81 - BLOWER WHEEL END HORIZ	.150 In/Sec	
82 - BLOWER WHEEL END VERT	.128 In/Sec	
 P4C-102A - BOILER FEEDWATER PUMP	 (13-Nov-19)	
	OVERALL LEVEL	
11 - MOTOR OUTBOARD HORIZ	.048 In/Sec	
12 - MOTOR OUTBOARD VERT	.031 In/Sec	
21 - MOTOR INBOARD HORIZ	.070 In/Sec	
22 - MOTOR INBOARD VERT	.028 In/Sec	
23 - MOTOR INBOARD AXIAL	.033 In/Sec	
71 - PUMP CPLG END HORIZ	.039 In/Sec	
72 - PUMP CPLG END VERT	.017 In/Sec	
81 - PUMP OPP END HORIZ	.056 In/Sec	
82 - PUMP OPP END VERT	.023 In/Sec	
 P24-102B - JOCKEY FIRE PUMP VERTICAL	 (13-Nov-19)	
	OVERALL LEVEL	
11 - MOTOR OUTBOARD HORIZ	.107 In/Sec	
12 - MOTOR OUTBOARD VERT	.076 In/Sec	
21 - MOTOR INBOARD HORIZ	.062 In/Sec	
22 - MOTOR INBOARD VERT	.066 In/Sec	
23 - MOTOR INBOARD AXIAL	.070 In/Sec	
 P24-63DEGN - 63 DEG N WATER PUMP	 (13-Nov-19)	
	OVERALL LEVEL	
11 - MOTOR OUTBOARD HORIZ	.175 In/Sec	
12 - MOTOR OUTBOARD VERT	.193 In/Sec	
21 - MOTOR INBOARD HORIZ	.138 In/Sec	
22 - MOTOR INBOARD VERT	.241 In/Sec	
23 - MOTOR INBOARD AXIAL	.102 In/Sec	
71 - PUMP CPLG END HORIZ	.124 In/Sec	
72 - PUMP CPLG END VERT	.063 In/Sec	
73 - PUMP CPLG END AXIAL	.174 In/Sec	

81	- PUMP OPP END HORIZ	.118 In/Sec
82	- PUMP OPP END VERT	.079 In/Sec
P24-63DEGS - 63 DEG S WATER PUMP		(13-Nov-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.078 In/Sec
12	- MOTOR OUTBOARD VERT	.073 In/Sec
21	- MOTOR INBOARD HORIZ	.135 In/Sec
22	- MOTOR INBOARD VERT	.043 In/Sec
23	- MOTOR INBOARD AXIAL	.116 In/Sec
71	- PUMP CPLG END HORIZ	.170 In/Sec
72	- PUMP CPLG END VERT	.059 In/Sec
73	- PUMP CPLG END AXIAL	.050 In/Sec
81	- PUMP OPP END HORIZ	.095 In/Sec
82	- PUMP OPP END VERT	.037 In/Sec
P24-85DEGN - 85 DEG N WATER CIRC PUMP 125		(13-Nov-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.076 In/Sec
12	- MOTOR OUTBOARD VERT	.036 In/Sec
21	- MOTOR INBOARD HORIZ	.077 In/Sec
22	- MOTOR INBOARD VERT	.047 In/Sec
23	- MOTOR INBOARD AXIAL	.034 In/Sec
71	- PUMP CPLG END HORIZ	.145 In/Sec
72	- PUMP CPLG END VERT	.140 In/Sec
73	- PUMP CPLG END AXIAL	.220 In/Sec
81	- PUMP OPP END HORIZ	.202 In/Sec
82	- PUMP OPP END VERT	.116 In/Sec
P24-85DEGS - 85 DEG S WATER CIRC PUMP 125		(13-Nov-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.081 In/Sec
12	- MOTOR OUTBOARD VERT	.101 In/Sec
21	- MOTOR INBOARD HORIZ	.073 In/Sec
22	- MOTOR INBOARD VERT	.067 In/Sec
23	- MOTOR INBOARD AXIAL	.085 In/Sec
71	- PUMP CPLG END HORIZ	.226 In/Sec
72	- PUMP CPLG END VERT	.284 In/Sec
73	- PUMP CPLG END AXIAL	.533 In/Sec
81	- PUMP OPP END HORIZ	.211 In/Sec
82	- PUMP OPP END VERT	.312 In/Sec
P24BGBL876 - BIG BLUE WATER PUMP-63 DEG		(13-Nov-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.126 In/Sec
11H	- MOTOR OB HORIZ -hi freq	.155 In/Sec
12	- MOTOR OUTBOARD VERT	.051 In/Sec
21	- MOTOR INBOARD HORIZ	.161 In/Sec
22	- MOTOR INBOARD VERT	.055 In/Sec
23	- MOTOR INBOARD AXIAL	.065 In/Sec
71	- PUMP CPLG END HORIZ	.266 In/Sec
72	- PUMP CPLG END VERT	.219 In/Sec
73	- PUMP CPLG END AXIAL	.239 In/Sec
81	- PUMP OPP END HORIZ	.233 In/Sec
82	- PUMP OPP END VERT	.230 In/Sec
P36-905A - N COOL TWR-NORTH PUMP		(13-Nov-19)

	OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZ	.071 In/Sec
12 - MOTOR OUTBOARD VERT	.045 In/Sec
21 - MOTOR INBOARD HORIZ	.071 In/Sec
22 - MOTOR INBOARD VERT	.084 In/Sec
23 - MOTOR INBOARD AXIAL	.083 In/Sec
71 - PUMP CPLG END HORIZ	.084 In/Sec
72 - PUMP CPLG END VERT	.080 In/Sec
73 - PUMP CPLG END AXIAL	.161 In/Sec
81 - PUMP OPP END HORIZ	.112 In/Sec
82 - PUMP OPP END VERT	.088 In/Sec
83 - PUMP OPP END AXIAL	.135 In/Sec

P36-905B - N COOL TWR-SOUTH PUMP	(13-Nov-19)
	OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZ	.038 In/Sec
12 - MOTOR OUTBOARD VERT	.023 In/Sec
21 - MOTOR INBOARD HORIZ	.035 In/Sec
22 - MOTOR INBOARD VERT	.050 In/Sec
23 - MOTOR INBOARD AXIAL	.027 In/Sec
71 - PUMP CPLG END HORIZ	.082 In/Sec
72 - PUMP CPLG END VERT	.057 In/Sec
73 - PUMP CPLG END AXIAL	.121 In/Sec
81 - PUMP OPP END HORIZ	.124 In/Sec
82 - PUMP OPP END VERT	.138 In/Sec
83 - PUMP OPP END AXIAL	.072 In/Sec

C36-EAST - UTILITY AIRCOMP ROTARY 200HP	(13-Nov-19)
	OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZ	.061 In/Sec
12 - MOTOR OUTBOARD VERT	.066 In/Sec
21 - MOTOR INBOARD HORIZ	.092 In/Sec
22 - MOTOR INBOARD VERT	.084 In/Sec
23 - MOTOR INBOARD AXIAL	.088 In/Sec
71 - MALE - CPLG END HORIZ	.093 In/Sec
72 - MALE - CPLG END VERT	.125 In/Sec
73 - MALE-CPLG END AXIAL	.138 In/Sec
81 - MALE- OPP END HORIZ	.128 In/Sec
82 - MALE- OPP END VERT	.130 In/Sec
71F - FEMALE - CPLG END HORIZ	.134 In/Sec
72F - FEMALE- CPLG END VERT	.092 In/Sec
81F - FEMALE- OPP END HORIZ	.097 In/Sec
82F - FEMALE- OPP END VERT	.082 In/Sec

C36-SOUTH - UTILITY AIRCOMP ROTARY 150HP	(13-Nov-19)
	OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZ	.099 In/Sec
12 - MOTOR OUTBOARD VERT	.106 In/Sec
21 - MOTOR INBOARD HORIZ	.113 In/Sec
22 - MOTOR INBOARD VERT	.080 In/Sec
23 - MOTOR INBOARD AXIAL	.121 In/Sec
71 - MALE - CPLG END HORIZ	.143 In/Sec
72 - MALE - CPLG END VERT	.117 In/Sec
81 - MALE- OPP END HORIZ	.177 In/Sec
82 - MALE- OPP END VERT	.119 In/Sec
71F - FEMALE - CPLG END HORIZ	.185 In/Sec
72F - FEMALE- CPLG END VERT	.131 In/Sec

81F - FEMALE- OPP END HORIZ	.180 In/Sec
82F - FEMALE- OPP END VERT	.119 In/Sec
C36-WEST - UTILITY AIRCOMP ROTARY 150HP (13-Nov-19)	
	OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZ	.068 In/Sec
12 - MOTOR OUTBOARD VERT	.059 In/Sec
21 - MOTOR INBOARD HORIZ	.092 In/Sec
22 - MOTOR INBOARD VERT	.232 In/Sec
23 - MOTOR INBOARD AXIAL	.132 In/Sec
71 - MALE - CPLG END HORIZ	.088 In/Sec
72 - MALE - CPLG END VERT	.074 In/Sec
81 - MALE- OPP END HORIZ	.123 In/Sec
82 - MALE- OPP END VERT	.104 In/Sec
71F - FEMALE - CPLG END HORIZ	.116 In/Sec
72F - FEMALE- CPLG END VERT	.145 In/Sec
81F - FEMALE- OPP END HORIZ	.106 In/Sec
82F - FEMALE- OPP END VERT	.141 In/Sec
P39-4-877 - WELL PUMP #4 (13-Nov-19)	
	OVERALL LEVEL
11 - MOTOR TOP N-S	.309 In/Sec
12 - MOTOR TOP E-W	.221 In/Sec
13 - MOTOR TOP VERT	.066 In/Sec
21 - MOTOR BOTTOM N-S	.165 In/Sec
22 - MOTOR BOTTOM E-W	.099 In/Sec
23 - MOTOR BOTTOM VERT	.087 In/Sec
C42-4 - AXIAL TWIN SCREW COMPRESSOR (13-Nov-19)	
	OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZ	.107 In/Sec
12 - MOTOR OUTBOARD VERT	.050 In/Sec
13 - MOTOR OUTBOARD AXIAL	.157 In/Sec
21 - MOTOR INBOARD HORIZ	.126 In/Sec
22 - MOTOR INBOARD VERT	.087 In/Sec
23 - MOTOR INBOARD AXIAL	.089 In/Sec
71 - MALE - CPLG END HORIZ	.115 In/Sec
72 - MALE - CPLG END VERT	.076 In/Sec
73 - MALE-CPLG END AXIAL	.137 In/Sec
81 - MALE- OPP END HORIZ	.140 In/Sec
82 - MALE- OPP END VERT	.097 In/Sec
83 - MALE-OPP END AXIAL	.088 In/Sec
71F - FEMALE - CPLG END HORIZ	.151 In/Sec
72F - FEMALE- CPLG END VERT	.063 In/Sec
73F - FEMALE-CPLG END AXIAL	.120 In/Sec
82F - FEMALE- OPP END VERT	.097 In/Sec
83F - FEMALE- OPP END AXIAL	.120 In/Sec
P42-4A - CENTRIFUGAL HOT OIL PUMP 5HP (13-Nov-19)	
	OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZ	.032 In/Sec
12 - MOTOR OUTBOARD VERT	.022 In/Sec
13 - MOTOR OUTBOARD AXIAL	.032 In/Sec
21 - MOTOR INBOARD HORIZ	.016 In/Sec
22 - MOTOR INBOARD VERT	.030 In/Sec
23 - MOTOR INBOARD AXIAL	.034 In/Sec
71 - PUMP COUPLING END HORIZ	.038 In/Sec

72	- PUMP COUPLING END VERT	.0095 In/Sec
73	- PUMP COUPLING END AXIAL	.013 In/Sec
81	- PUMP IMPELLER END HORIZ	.019 In/Sec
82	- PUMP IMPELLER END VERT	.013 In/Sec

P42-4B - CENTRIFUGAL HOT OIL PUMP 5HP (13-Nov-19)
OVERALL LEVEL

11	- MOTOR OUTBOARD HORIZ	.024 In/Sec
12	- MOTOR OUTBOARD VERT	.013 In/Sec
21	- MOTOR INBOARD HORIZ	.026 In/Sec
22	- MOTOR INBOARD VERT	.016 In/Sec
23	- MOTOR INBOARD AXIAL	.041 In/Sec
71	- PUMP COUPLING END HORIZ	.021 In/Sec
72	- PUMP COUPLING END VERT	.012 In/Sec
73	- PUMP COUPLING END AXIAL	.017 In/Sec
81	- PUMP IMPELLER END HORIZ	.010 In/Sec
82	- PUMP IMPELLER END VERT	.011 In/Sec

P42-4C - CENTRIFUGAL HOT OIL PMP 15HP (13-Nov-19)
OVERALL LEVEL

11	- MOTOR OUTBOARD HORIZ	.168 In/Sec
12	- MOTOR OUTBOARD VERT	.143 In/Sec
21	- MOTOR INBOARD HORIZ	.164 In/Sec
22	- MOTOR INBOARD VERT	.090 In/Sec
23	- MOTOR INBOARD AXIAL	.098 In/Sec
71	- PUMP COUPLING END HORIZ	.181 In/Sec
72	- PUMP COUPLING END VERT	.125 In/Sec
73	- PUMP COUPLING END AXIAL	.062 In/Sec
81	- PUMP IMPELLER END HORIZ	.069 In/Sec
82	- PUMP IMPELLER END VERT	.059 In/Sec

P42-4D - CENTRIFUGAL HOT OIL PUMP 5HP (13-Nov-19)
OVERALL LEVEL

11	- MOTOR OUTBOARD HORIZ	.041 In/Sec
12	- MOTOR OUTBOARD VERT	.017 In/Sec
21	- MOTOR INBOARD HORIZ	.021 In/Sec
22	- MOTOR INBOARD VERT	.020 In/Sec
23	- MOTOR INBOARD AXIAL	.043 In/Sec
71	- PUMP COUPLING END HORIZ	.031 In/Sec
72	- PUMP COUPLING END VERT	.013 In/Sec
73	- PUMP COUPLING END AXIAL	.022 In/Sec
81	- PUMP IMPELLER END HORIZ	.027 In/Sec
82	- PUMP IMPELLER END VERT	.022 In/Sec

P48-7B - ROTOJET HIGH PRESS PUMP 15HP (13-Nov-19)
OVERALL LEVEL

11	- MOTOR OUTBOARD HORIZ	.111 In/Sec
12	- MOTOR OUTBOARD VERT	.223 In/Sec
21	- MOTOR INBOARD HORIZ	.188 In/Sec
22	- MOTOR INBOARD VERT	.389 In/Sec
23	- MOTOR INBOARD AXIAL	.739 In/Sec

C53-1A-050 - C1-A H2 COMPRESSOR (13-Nov-19)
OVERALL LEVEL

11	- MOTOR OUTBOARD HORIZ	.099 In/Sec
12	- MOTOR OUTBOARD VERT	.038 In/Sec
21	- MOTOR INBOARD HORIZ	.107 In/Sec

22	- MOTOR INBOARD VERT	.085 In/Sec
23	- MOTOR INBOARD AXIAL	.125 In/Sec
71	- PUMP CPLG END HORIZ	.143 In/Sec
72	- PUMP CPLG END VERT	.028 In/Sec
73	- PUMP CPLG END AXIAL	.055 In/Sec
81	- PUMP OPP END HORIZ	.140 In/Sec
82	- PUMP OPP END VERT	.020 In/Sec

C53-301A - C-301A RECIP COMPRESSOR (13-Nov-19)
OVERALL LEVEL

11	- MOTOR OUTBOARD HORIZ	.070 In/Sec
12	- MOTOR OUTBOARD VERT	.095 In/Sec
21	- MOTOR INBOARD HORIZ	.075 In/Sec
22	- MOTOR INBOARD VERT	.104 In/Sec
23	- MOTOR INBOARD AXIAL	.101 In/Sec
71	- CRANKSHAFT DRIVE END HORIZ	.090 In/Sec
72	- CRANKSHAFT DRIVE END VERT	.065 In/Sec
73	- CRANKSHAFT DRIVE END AXIAL	.135 In/Sec
81	- CRANKSHAFT OPP END HORIZ	.086 In/Sec
82	- CRANKSHAFT OPP END VERT	.066 In/Sec

P53-301 - ANSI CENTRIFUGAL PUMP 50 HP (13-Nov-19)
OVERALL LEVEL

11	- MOTOR OUTBOARD HORIZ	.079 In/Sec
12	- MOTOR OUTBOARD VERT	.089 In/Sec
21	- MOTOR INBOARD HORIZ	.103 In/Sec
22	- MOTOR INBOARD VERT	.107 In/Sec
23	- MOTOR INBOARD AXIAL	.184 In/Sec
71	- PUMP CPLG END HORIZ	.110 In/Sec
72	- PUMP CPLG END VERT	.069 In/Sec
73	- PUMP CPLG END AXIAL	.068 In/Sec
81	- PUMP OPP END HORIZ	.095 In/Sec
82	- PUMP OPP END VERT	.047 In/Sec

R53-301 - AGITATOR GBX CHEMINEER 15HP (13-Nov-19)
OVERALL LEVEL

11	- MOTOR OUTBOARD HORIZ	.966 In/Sec
12	- MOTOR OUTBOARD VERT	.218 In/Sec
21	- MOTOR INBOARD HORIZ	1.033 In/Sec
22	- MOTOR INBOARD VERT	.265 In/Sec
23	- MOTOR INBOARD AXIAL	.468 In/Sec
31	- GEARBOX INPUT SHAFT-INBD HOR	.537 In/Sec
32	- GEARBOX INPUT SHAFT INBD VERT	.068 In/Sec
41	- GEARBOX INPUT SHAFT OUTBD HOR	.195 In/Sec
42	- GEARBOX INPUT SHAFT OUTBD VERT	.047 In/Sec
51	- GEARBOX OUTPUT SHAFT TOP N-S	.412 In/Sec
53	- GEARBOX OUTPUT SHAFT TOP VERT	.052 In/Sec
61	- GEARBOX OUTPUT SHAFT MID N-S	.224 In/Sec
62	- GEARBOX OUTPUT SHAFT MID E-W	.057 In/Sec
71	- GEARBOX OUTPUT SHAFT BOT N-S	.080 In/Sec

P53-310A - GRUNDFOSS VERT PUMP 10HP (13-Nov-19)
OVERALL LEVEL

11	- MOTOR OUTBOARD HORIZ	.076 In/Sec
12	- MOTOR OUTBOARD VERT	.051 In/Sec
21	- MOTOR INBOARD HORIZ	.268 In/Sec
22	- MOTOR INBOARD VERT	.039 In/Sec

23	- MOTOR INBOARD AXIAL	.037 In/Sec
71	- PUMP CPLG END HORIZ	.139 In/Sec
72	- PUMP CPLG END VERT	.093 In/Sec
81	- PUMP OPP END HORIZ	.044 In/Sec
82	- PUMP OPP END VERT	.015 In/Sec

C54--115	- COMP 2CYL 2 STAGE 75 HP	(13-Nov-19)
	OVERALL LEVEL	
11	- MOTOR OUTBOARD HORIZ	.064 In/Sec
12	- MOTOR OUTBOARD VERT	.119 In/Sec
21	- MOTOR INBOARD HORIZ	.053 In/Sec
22	- MOTOR INBOARD VERT	.044 In/Sec
23	- MOTOR INBOARD AXIAL	.099 In/Sec
71	- PUMP CPLG END HORIZ	.022 In/Sec
72	- PUMP CPLG END VERT	.022 In/Sec
73	- PUMP CPLG END AXIAL	.034 In/Sec
81	- PUMP OPP END HORIZ	.021 In/Sec
82	- PUMP OPP END VERT	.019 In/Sec

P54-112B	- CANNED MOTOR CENTRIFUG PUMP?	(13-Nov-19)
	OVERALL LEVEL	
11	- MOTOR OUTBOARD HORIZ	.040 In/Sec
12	- MOTOR OUTBOARD VERT	.0091 In/Sec
13	- MOTOR OUTBOARD AXIAL	.045 In/Sec
21	- MOTOR INBOARD HORIZ	.055 In/Sec
22	- MOTOR INBOARD VERT	.019 In/Sec
71	- PUMP CPLG END HORIZ	.039 In/Sec
72	- PUMP CPLG END VERT	.020 In/Sec
73	- PUMP CPLG END AXIAL	.016 In/Sec

R55-102	- REACTOR AGIT R-102	(13-Nov-19)
	OVERALL LEVEL	
11	- MOTOR OUTBOARD HORIZ	.116 In/Sec
12	- MOTOR OUTBOARD VERT	.306 In/Sec
21	- MOTOR INBOARD HORIZ	.177 In/Sec
22	- MOTOR INBOARD VERT	.124 In/Sec
23	- MOTOR INBOARD AXIAL	.210 In/Sec
31	- GEARBOX INPUT SHAFT-INBD HOR	.095 In/Sec
32	- GEARBOX INPUT SHAFT INBD VERT	.101 In/Sec
33	- GEARBOX INPUT SHAFT INBD AXIAL	.094 In/Sec
41	- GEARBOX INPUT SHAFT OUTBD HOR	.094 In/Sec
42	- GEARBOX INPUT SHAFT OUTBD VERT	.041 In/Sec
51	- GEARBOX OUTPUT SHAFT TOP PERP	.088 In/Sec
51L	- GEARBOX OUTPUT SHAFT TOP PERP	.125 In/Sec
52	- GEARBOX OUTPUT SHAFT TOP MA	.119 In/Sec

R55-104	- REACTOR AGIT R-104 (B55)	(13-Nov-19)
	OVERALL LEVEL	
11	- MOTOR OUTBOARD HORIZ	.047 In/Sec
12	- MOTOR OUTBOARD VERT	.044 In/Sec
21	- MOTOR INBOARD HORIZ	.057 In/Sec
22	- MOTOR INBOARD VERT	.027 In/Sec
23	- MOTOR INBOARD AXIAL	.037 In/Sec
31	- GEARBOX INPUT SHAFT-INBD HOR	.044 In/Sec
32	- GEARBOX INPUT SHAFT INBD VERT	.0083 In/Sec
33	- GEARBOX INPUT SHAFT INBD AXIAL	.025 In/Sec
41	- GEARBOX INPUT SHAFT OUTBD HOR	.060 In/Sec

42	- GEARBOX INPUT SHAFT OUTBD VERT	.023 In/Sec
51	- GEARBOX OUTPUT SHAFT TOP PERP	.039 In/Sec
52	- GEARBOX OUTPUT SHAFT TOP MA	.0098 In/Sec
61	- GEARBOX OUTPUT SHAFT MID PERP	.029 In/Sec

R55-106 - REACTOR AGIT R-106 (13-Nov-19)
OVERALL LEVEL

11	- MOTOR OUTBOARD HORIZ	.185 In/Sec
21	- MOTOR INBOARD HORIZ	.261 In/Sec
23	- MOTOR INBOARD AXIAL	.235 In/Sec
31	- GEARBOX INPUT SHAFT-INBD HOR	.096 In/Sec
32	- GEARBOX INPUT SHAFT INBD VERT	.065 In/Sec
41	- GEARBOX INPUT SHAFT OUTBD HOR	.110 In/Sec
51	- GEARBOX OUTPUT SHAFT TOP PERP	.100 In/Sec
61	- GEARBOX OUTPUT SHAFT MID PERP	.090 In/Sec

C67-51 - AXIAL TWIN SCREW COMPRESSOR (13-Nov-19)
OVERALL LEVEL

11	- MOTOR OUTBOARD HORIZ	.070 In/Sec
12	- MOTOR OUTBOARD VERT	.043 In/Sec
13	- MOTOR OUTBOARD AXIAL	.062 In/Sec
21	- MOTOR INBOARD HORIZ	.068 In/Sec
22	- MOTOR INBOARD VERT	.047 In/Sec
23	- MOTOR INBOARD AXIAL	.070 In/Sec
71	- MALE - CPLG END HORIZ	.185 In/Sec
72	- MALE - CPLG END VERT	.185 In/Sec
73	- MALE-CPLG END AXIAL	.127 In/Sec
81	- MALE- OPP END HORIZ	.231 In/Sec
82	- MALE- OPP END VERT	.198 In/Sec
83	- MALE-OPP END AXIAL	.155 In/Sec
71F	- FEMALE - CPLG END HORIZ	.178 In/Sec
72F	- FEMALE- CPLG END VERT	.135 In/Sec
73F	- FEMALE-CPLG END AXIAL	.167 In/Sec
81F	- FEMALE- OPP END HORIZ	.244 In/Sec
82F	- FEMALE- OPP END VERT	.210 In/Sec
83F	- FEMALE- OPP END AXIAL	.196 In/Sec

P67-54 - HOT OIL CIRC PMP CENT 15HP (13-Nov-19)
OVERALL LEVEL

11	- MOTOR OUTBOARD HORIZ	.222 In/Sec
12	- MOTOR OUTBOARD VERT	.019 In/Sec
21	- MOTOR INBOARD HORIZ	.165 In/Sec
22	- MOTOR INBOARD VERT	.028 In/Sec
23	- MOTOR INBOARD AXIAL	.043 In/Sec
71	- PUMP CPLG END HORIZ	.065 In/Sec
73	- PUMP CPLG END AXIAL	.035 In/Sec
81	- PUMP OPP END HORIZ	.051 In/Sec
82	- PUMP OPP END VERT	.024 In/Sec

P67-504 - HOT OIL CIRC PMP CENT 50HP (13-Nov-19)
OVERALL LEVEL

11	- MOTOR OUTBOARD HORIZ	.016 In/Sec
12	- MOTOR OUTBOARD VERT	.027 In/Sec
21	- MOTOR INBOARD HORIZ	.024 In/Sec
22	- MOTOR INBOARD VERT	.025 In/Sec
23	- MOTOR INBOARD AXIAL	.034 In/Sec
71	- PUMP CPLG END HORIZ	.048 In/Sec

72	- PUMP CPLG END VERT	.028 In/Sec
73	- PUMP CPLG END AXIAL	.033 In/Sec
81	- PUMP OPP END HORIZ	.031 In/Sec
82	- PUMP OPP END VERT	.023 In/Sec

B76-101806 - FD FAN- EAST H2 PLANT		(13-Nov-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.177 In/Sec
12	- MOTOR OUTBOARD VERT	.250 In/Sec
21	- MOTOR INBOARD HORIZ	.104 In/Sec
22	- MOTOR INBOARD VERT	.354 In/Sec
23	- MOTOR INBOARD AXIAL	.200 In/Sec
71	- FAN SHEAVE END HORIZ	.225 In/Sec
72	- FAN SHEAVE END VERT	.517 In/Sec
73	- FAN SHEAVE END AXIAL	.248 In/Sec
81	- FAN WHEEL END HORIZ	.119 In/Sec
82	- FAN WHEEL END VERT	.373 In/Sec

B76-103806 - ID FAN- EAST H2 PLANT		(13-Nov-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.244 In/Sec
12	- MOTOR OUTBOARD VERT	.100 In/Sec
21	- MOTOR INBOARD HORIZ	.095 In/Sec
22	- MOTOR INBOARD VERT	.145 In/Sec
23	- MOTOR INBOARD AXIAL	.165 In/Sec
81	- FAN WHEEL END HORIZ	.223 In/Sec

P76-102806 - P102 BFW PUMP-EAST H2 PLANT		(13-Nov-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.058 In/Sec
12	- MOTOR OUTBOARD VERT	.057 In/Sec
21	- MOTOR INBOARD HORIZ	.040 In/Sec
22	- MOTOR INBOARD VERT	.056 In/Sec
23	- MOTOR INBOARD AXIAL	.020 In/Sec
71	- PUMP CPLG END HORIZ	.039 In/Sec
72	- PUMP CPLG END VERT	.034 In/Sec
73	- PUMP CPLG END AXIAL	.023 In/Sec
81	- PUMP HIGH SPEED HORIZ	.025 In/Sec
82	- PUMP HIGH SPEED VERT	.025 In/Sec

P76-103806 - P103 QUENCH PUMP-EAST H2 PLT		(13-Nov-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.058 In/Sec
12	- MOTOR OUTBOARD VERT	.040 In/Sec
21	- MOTOR INBOARD HORIZ	.080 In/Sec
22	- MOTOR INBOARD VERT	.056 In/Sec
23	- MOTOR INBOARD AXIAL	.080 In/Sec

R80-10 - AGITATOR GBX		(13-Nov-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.080 In/Sec
12	- MOTOR OUTBOARD VERT	.070 In/Sec
21	- MOTOR INBOARD HORIZ	.045 In/Sec
22	- MOTOR INBOARD VERT	.055 In/Sec
23	- MOTOR INBOARD AXIAL	.048 In/Sec
31	- GEARBOX INPUT SHAFT-INBD HOR	.049 In/Sec
32	- GEARBOX INPUT SHAFT INBD VERT	.039 In/Sec

41	- GEARBOX INPUT SHAFT OUTBD HOR	.041 In/Sec
42	- GEARBOX INPUT SHAFT OUTBD VERT	.045 In/Sec
51	- GEARBOX OUTPUT SHAFT TOP N-S	.042 In/Sec
52	- GEARBOX OUTPUT SHAFT TOP E-W	.053 In/Sec
61	- GEARBOX OUTPUT SHAFT MID N-S	.032 In/Sec
62	- GEARBOX OUTPUT SHAFT MID E-W	.051 In/Sec

R80-30 - AGITATOR GBX 15HP CHEMINEER		(13-Nov-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.082 In/Sec
12	- MOTOR OUTBOARD VERT	.052 In/Sec
21	- MOTOR INBOARD HORIZ	.069 In/Sec
22	- MOTOR INBOARD VERT	.104 In/Sec
23	- MOTOR INBOARD AXIAL	.094 In/Sec
31	- GEARBOX INPUT SHAFT-INBD HOR	.054 In/Sec
32	- GEARBOX INPUT SHAFT INBD VERT	.035 In/Sec
33	- GEARBOX INPUT SHAFT INBD AXIAL	.081 In/Sec
41	- GEARBOX INPUT SHAFT OUTBD HOR	.079 In/Sec
42	- GEARBOX INPUT SHAFT OUTBD VERT	.023 In/Sec
51	- GEARBOX OUTPUT SHAFT TOP N-S	.050 In/Sec
61	- GEARBOX OUTPUT SHAFT MID N-S	.037 In/Sec

B82-101A - FAN FORCED DRAFT 10HP SOUTH		(13-Nov-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.072 In/Sec
12	- MOTOR OUTBOARD VERT	.082 In/Sec
21	- MOTOR INBOARD HORIZ	.105 In/Sec
22	- MOTOR INBOARD VERT	.188 In/Sec
23	- MOTOR INBOARD AXIAL	.231 In/Sec

B82-102 - INDUCED DRAFT 150 HP		(13-Nov-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.032 In/Sec
12	- MOTOR OUTBOARD VERT	.028 In/Sec
21	- MOTOR INBOARD HORIZ	.029 In/Sec
22	- MOTOR INBOARD VERT	.041 In/Sec
23	- MOTOR INBOARD AXIAL	.039 In/Sec

CHLR67-1N - 240T TRANE CHILLER NORTH		(13-Nov-19)
		OVERALL LEVEL
11	- HOTOR OUTBOARD HORIZ	.100 In/Sec
12	- HOTOR OUTBOARD VERT	.117 In/Sec
13	- HOTOR OUTBOARD AXIAL	.051 In/Sec
21	- HOTOR INBOARD HORIZ	.110 In/Sec
22	- HOTOR INBOARD VERT	.107 In/Sec
23	- HOTOR INBOARD AXIAL	.073 In/Sec
71	- COMP INBOARD HORIZ	.062 In/Sec
72	- COMP INBOARD VERT	.064 In/Sec
73	- COMP INBOARD AXIAL	.058 In/Sec
81	- COMP OUTBD HORIZ	.087 In/Sec
82	- COMP OUTBD VERT	.099 In/Sec

CHLR67-1W - 240T TRANE CHILLER WEST		(13-Nov-19)
		OVERALL LEVEL
11	- HOTOR OUTBOARD HORIZ	.140 In/Sec
12	- HOTOR OUTBOARD VERT	.149 In/Sec
13	- HOTOR OUTBOARD AXIAL	.065 In/Sec

21	-	HOTOR INBOARD HORIZ	.082 In/Sec
22	-	HOTOR INBOARD VERT	.095 In/Sec
71	-	COMP INBOARD HORIZ	.053 In/Sec
72	-	COMP INBOARD VERT	.069 In/Sec
81	-	COMP OUTBD HORIZ	.156 In/Sec
82	-	COMP OUTBD VERT	.107 In/Sec

CHLR67-1E	-	240T TRANE CHILLER EAST	(13-Nov-19)
			OVERALL LEVEL
11	-	HOTOR OUTBOARD HORIZ	.058 In/Sec

CHLR45-1	-	20T TRANE CHILLER	(13-Nov-19)
			OVERALL LEVEL
11	-	HOTOR OUTBOARD HORIZ	.254 In/Sec
12	-	HOTOR OUTBOARD VERT	.253 In/Sec
21	-	HOTOR INBOARD HORIZ	1.025 In/Sec
22	-	HOTOR INBOARD VERT	.740 In/Sec
23	-	HOTOR INBOARD AXIAL	.061 In/Sec

Clarification Of Vibration Units:
 Vel --> In/Sec PK