

October 11, 2019

Penn A Kem

Subject: October 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

P81-101B West Fire Pump

The unit had a terrible screeching sound during testing. This could have been the bearing rolling elements sliding. Non-synchronous vibrations were seen in the data for both the motor and pump bearings; which indicate defect frequencies are present. We recommend having the unit's bearings and seals replaced and any other consumable parts inspected and replaced as needed. **Rated a Class III Defect based on this survey.**

P24-63DEGN 63 Degree North Water Pump

Random impacting in the data is usually a good indicator of the presence of bearing defects. 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. Inspect the outboard pump bearing and check process parameters as time allows. **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. 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 has a high vibration at near 79 Hz. Inspect the pump impeller for wear that would cause imbalance. **Rated a Class II Defect.**

R48-2 Reactor Agitator

Unit motor has overall vibration at almost 1/2" per second velocity peak. Inspect the motor and drive train for issues. **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 III 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.**

September report notes:**P54-112B Canned Motor Centrifugal Pump.****Not Running This Survey****Reported last month**

The unit case is split and leaking from what looks to be previous hard freeze damage.

R53-301 Agitator**Not Running This Survey****Reported last month**

The high amplitude vibration data could indicate an issue in or adjacent to the motor. Ensure all fasteners are tight. Inspect the motor cooling fan and the shaft coupling for wear or damage. Have the shaft alignment checked and adjusted if necessary. Vibrations over 1"/sec velocity peak require attention. **Rated a Class III Defect.**

Still

B82-101B FD Fan North**Not Running This Survey****Reported last month**

This unit should be shut down and inspected as soon as possible. The likelihood of secondary damage is extremely conceivable if allowed to run. Unit area should be barricaded until repairs are completed. Vibrations are over 3"/sec velocity peak in the time waveform of the motor inboard vertical and dominated by the shaft fundamental. We suspect imbalance and other factors such as loose fasteners, looseness in the bearing fits and possible structural defects. **Rated a Class IV Defect.**

Overall vibrations

Abbreviated Last Measurement Summary *****

Database: penn.rbm
Station: NEW EQUIPMENT
Report Date: 11-Oct-19 12:54

MEASUREMENT POINT -----	OVERALL LEVEL -----	HFD / VHFD -----
B4C-101 - FAN, FORCED DRAFT 150 HP	(10-Oct-19) OVERALL LEVEL	
11 - MOTOR OUTBOARD HORIZ	.178 In/Sec	
12 - MOTOR OUTBOARD VERT	.094 In/Sec	
21 - MOTOR INBOARD HORIZ	.165 In/Sec	
22 - MOTOR INBOARD VERT	.201 In/Sec	
23 - MOTOR INBOARD AXIAL	.123 In/Sec	
P4C-102A - BOILER FEEDWATER PUMP	(10-Oct-19) OVERALL LEVEL	
11 - MOTOR OUTBOARD HORIZ	.068 In/Sec	
12 - MOTOR OUTBOARD VERT	.026 In/Sec	
21 - MOTOR INBOARD HORIZ	.037 In/Sec	
22 - MOTOR INBOARD VERT	.026 In/Sec	
23 - MOTOR INBOARD AXIAL	.051 In/Sec	
71 - PUMP CPLG END HORIZ	.080 In/Sec	
72 - PUMP CPLG END VERT	.024 In/Sec	
73 - PUMP CPLG END AXIAL	.052 In/Sec	
81 - PUMP OPP END HORIZ	.034 In/Sec	
82 - PUMP OPP END VERT	.043 In/Sec	
P24-102B - JOCKEY FIRE PUMP VERTICAL	(10-Oct-19) OVERALL LEVEL	
11 - MOTOR OUTBOARD HORIZ	.094 In/Sec	
12 - MOTOR OUTBOARD VERT	.071 In/Sec	
21 - MOTOR INBOARD HORIZ	.087 In/Sec	
22 - MOTOR INBOARD VERT	.087 In/Sec	
23 - MOTOR INBOARD AXIAL	.121 In/Sec	
P24-63DEGN - 63 DEG N WATER PUMP	(10-Oct-19) OVERALL LEVEL	
11 - MOTOR OUTBOARD HORIZ	.119 In/Sec	
12 - MOTOR OUTBOARD VERT	.134 In/Sec	
21 - MOTOR INBOARD HORIZ	.155 In/Sec	
22 - MOTOR INBOARD VERT	.248 In/Sec	
23 - MOTOR INBOARD AXIAL	.084 In/Sec	
71 - PUMP CPLG END HORIZ	.102 In/Sec	
72 - PUMP CPLG END VERT	.109 In/Sec	
73 - PUMP CPLG END AXIAL	.254 In/Sec	
81 - PUMP OPP END HORIZ	.102 In/Sec	
82 - PUMP OPP END VERT	.064 In/Sec	
83 - PUMP OPP END AXIAL	.142 In/Sec	

P24-63DEGS - 63 DEG S WATER PUMP	(10-Oct-19)
	OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZ	.234 In/Sec
12 - MOTOR OUTBOARD VERT	.082 In/Sec
21 - MOTOR INBOARD HORIZ	.141 In/Sec
22 - MOTOR INBOARD VERT	.084 In/Sec
23 - MOTOR INBOARD AXIAL	.237 In/Sec
71 - PUMP CPLG END HORIZ	.121 In/Sec
72 - PUMP CPLG END VERT	.048 In/Sec
73 - PUMP CPLG END AXIAL	.202 In/Sec
81 - PUMP OPP END HORIZ	.076 In/Sec
82 - PUMP OPP END VERT	.068 In/Sec

P24-85DEGN - 85 DEG N WATER CIRC PUMP 125	(10-Oct-19)
	OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZ	.074 In/Sec
12 - MOTOR OUTBOARD VERT	.034 In/Sec
21 - MOTOR INBOARD HORIZ	.077 In/Sec
22 - MOTOR INBOARD VERT	.063 In/Sec
23 - MOTOR INBOARD AXIAL	.063 In/Sec
71 - PUMP CPLG END HORIZ	.147 In/Sec
72 - PUMP CPLG END VERT	.144 In/Sec
73 - PUMP CPLG END AXIAL	.218 In/Sec
81 - PUMP OPP END HORIZ	.238 In/Sec
82 - PUMP OPP END VERT	.108 In/Sec

P24-85DEGS - 85 DEG S WATER CIRC PUMP 125	(10-Oct-19)
	OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZ	.081 In/Sec
12 - MOTOR OUTBOARD VERT	.091 In/Sec
21 - MOTOR INBOARD HORIZ	.088 In/Sec
22 - MOTOR INBOARD VERT	.068 In/Sec
23 - MOTOR INBOARD AXIAL	.084 In/Sec
71 - PUMP CPLG END HORIZ	.204 In/Sec
72 - PUMP CPLG END VERT	.285 In/Sec
73 - PUMP CPLG END AXIAL	.433 In/Sec
81 - PUMP OPP END HORIZ	.184 In/Sec
82 - PUMP OPP END VERT	.318 In/Sec

P24BGBL876 - BIG BLUE WATER PUMP-63 DEG	(10-Oct-19)
	OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZ	.139 In/Sec
11H - MOTOR OB HORIZ -hi freq	.162 In/Sec
12 - MOTOR OUTBOARD VERT	.065 In/Sec
21 - MOTOR INBOARD HORIZ	.158 In/Sec
22 - MOTOR INBOARD VERT	.111 In/Sec
23 - MOTOR INBOARD AXIAL	.076 In/Sec
71 - PUMP CPLG END HORIZ	.252 In/Sec
72 - PUMP CPLG END VERT	.171 In/Sec
73 - PUMP CPLG END AXIAL	.147 In/Sec
81 - PUMP OPP END HORIZ	.215 In/Sec
82 - PUMP OPP END VERT	.184 In/Sec

P36-905A - N COOL TWR-NORTH PUMP	(10-Oct-19)
	OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZ	.100 In/Sec
12 - MOTOR OUTBOARD VERT	.053 In/Sec

21	- MOTOR INBOARD HORIZ	.081 In/Sec
22	- MOTOR INBOARD VERT	.067 In/Sec
23	- MOTOR INBOARD AXIAL	.087 In/Sec
71	- PUMP CPLG END HORIZ	.088 In/Sec
72	- PUMP CPLG END VERT	.096 In/Sec
73	- PUMP CPLG END AXIAL	.191 In/Sec
81	- PUMP OPP END HORIZ	.118 In/Sec
82	- PUMP OPP END VERT	.110 In/Sec

P36-905B - N COOL TWR-SOUTH PUMP (10-Oct-19)
OVERALL LEVEL

11	- MOTOR OUTBOARD HORIZ	.045 In/Sec
12	- MOTOR OUTBOARD VERT	.021 In/Sec
21	- MOTOR INBOARD HORIZ	.041 In/Sec
22	- MOTOR INBOARD VERT	.044 In/Sec
23	- MOTOR INBOARD AXIAL	.026 In/Sec
71	- PUMP CPLG END HORIZ	.089 In/Sec
72	- PUMP CPLG END VERT	.082 In/Sec
73	- PUMP CPLG END AXIAL	.136 In/Sec
81	- PUMP OPP END HORIZ	.122 In/Sec
82	- PUMP OPP END VERT	.133 In/Sec

C36-EAST - UTILITY AIRCOMP ROTARY 200HP (10-Oct-19)
OVERALL LEVEL

11	- MOTOR OUTBOARD HORIZ	.056 In/Sec
12	- MOTOR OUTBOARD VERT	.069 In/Sec
21	- MOTOR INBOARD HORIZ	.098 In/Sec
22	- MOTOR INBOARD VERT	.100 In/Sec
23	- MOTOR INBOARD AXIAL	.106 In/Sec
71	- MALE - CPLG END HORIZ	.095 In/Sec
72	- MALE - CPLG END VERT	.112 In/Sec
73	- MALE-CPLG END AXIAL	.108 In/Sec
81	- MALE- OPP END HORIZ	.109 In/Sec
82	- MALE- OPP END VERT	.144 In/Sec
71F	- FEMALE - CPLG END HORIZ	.103 In/Sec
72F	- FEMALE- CPLG END VERT	.123 In/Sec
81F	- FEMALE- OPP END HORIZ	.124 In/Sec
82F	- FEMALE- OPP END VERT	.083 In/Sec

C36-WEST - UTILITY AIRCOMP ROTARY 150HP (10-Oct-19)
OVERALL LEVEL

11	- MOTOR OUTBOARD HORIZ	.078 In/Sec
12	- MOTOR OUTBOARD VERT	.052 In/Sec
21	- MOTOR INBOARD HORIZ	.049 In/Sec
22	- MOTOR INBOARD VERT	.074 In/Sec
23	- MOTOR INBOARD AXIAL	.091 In/Sec
71	- MALE - CPLG END HORIZ	.061 In/Sec
72	- MALE - CPLG END VERT	.071 In/Sec
73	- MALE-CPLG END AXIAL	.123 In/Sec
81	- MALE- OPP END HORIZ	.075 In/Sec
82	- MALE- OPP END VERT	.260 In/Sec
71F	- FEMALE - CPLG END HORIZ	.075 In/Sec
72F	- FEMALE- CPLG END VERT	.067 In/Sec
81F	- FEMALE- OPP END HORIZ	.111 In/Sec
82F	- FEMALE- OPP END VERT	.091 In/Sec

P39-4-877 - WELL PUMP #4 (10-Oct-19)

	OVERALL LEVEL
11 - MOTOR TOP N-S	.310 In/Sec
12 - MOTOR TOP E-W	.188 In/Sec
21 - MOTOR BOTTOM N-S	.148 In/Sec
22 - MOTOR BOTTOM E-W	.106 In/Sec
23 - MOTOR BOTTOM VERT	.103 In/Sec

C42-4	- AXIAL TWIN SCREW COMPRESSOR	(10-Oct-19)
	OVERALL LEVEL	
11 - MOTOR OUTBOARD HORIZ	.083 In/Sec	
12 - MOTOR OUTBOARD VERT	.070 In/Sec	
21 - MOTOR INBOARD HORIZ	.091 In/Sec	
22 - MOTOR INBOARD VERT	.068 In/Sec	
23 - MOTOR INBOARD AXIAL	.169 In/Sec	
71 - MALE - CPLG END HORIZ	.124 In/Sec	
72 - MALE - CPLG END VERT	.081 In/Sec	
73 - MALE-CPLG END AXIAL	.163 In/Sec	
81 - MALE- OPP END HORIZ	.187 In/Sec	
82 - MALE- OPP END VERT	.094 In/Sec	
83 - MALE-OPP END AXIAL	.162 In/Sec	
71F - FEMALE - CPLG END HORIZ	.146 In/Sec	
72F - FEMALE- CPLG END VERT	.053 In/Sec	
73F - FEMALE-CPLG END AXIAL	.100 In/Sec	
81F - FEMALE- OPP END HORIZ	.217 In/Sec	
82F - FEMALE- OPP END VERT	.090 In/Sec	
83F - FEMALE- OPP END AXIAL	.168 In/Sec	

P42-4A	- CENTRIFUGAL HOT OIL PUMP 5HP	(10-Oct-19)
	OVERALL LEVEL	
11 - MOTOR OUTBOARD HORIZ	.030 In/Sec	
12 - MOTOR OUTBOARD VERT	.028 In/Sec	
21 - MOTOR INBOARD HORIZ	.052 In/Sec	
22 - MOTOR INBOARD VERT	.023 In/Sec	
23 - MOTOR INBOARD AXIAL	.028 In/Sec	
71 - PUMP COUPLING END HORIZ	.020 In/Sec	
72 - PUMP COUPLING END VERT	.014 In/Sec	
73 - PUMP COUPLING END AXIAL	.016 In/Sec	
81 - PUMP IMPELLER END HORIZ	.046 In/Sec	
82 - PUMP IMPELLER END VERT	.014 In/Sec	

P42-4B	- CENTRIFUGAL HOT OIL PUMP 5HP	(10-Oct-19)
	OVERALL LEVEL	
11 - MOTOR OUTBOARD HORIZ	.031 In/Sec	
12 - MOTOR OUTBOARD VERT	.021 In/Sec	
21 - MOTOR INBOARD HORIZ	.025 In/Sec	
22 - MOTOR INBOARD VERT	.030 In/Sec	
23 - MOTOR INBOARD AXIAL	.031 In/Sec	
71 - PUMP COUPLING END HORIZ	.043 In/Sec	
72 - PUMP COUPLING END VERT	.015 In/Sec	
73 - PUMP COUPLING END AXIAL	.032 In/Sec	
81 - PUMP IMPELLER END HORIZ	.027 In/Sec	
82 - PUMP IMPELLER END VERT	.011 In/Sec	

P42-4C	- CENTRIFUGAL HOT OIL PMP 15HP	(10-Oct-19)
	OVERALL LEVEL	
11 - MOTOR OUTBOARD HORIZ	.175 In/Sec	
12 - MOTOR OUTBOARD VERT	.096 In/Sec	

21	- MOTOR INBOARD HORIZ	.168 In/Sec
22	- MOTOR INBOARD VERT	.107 In/Sec
23	- MOTOR INBOARD AXIAL	.090 In/Sec
71	- PUMP COUPLING END HORIZ	.181 In/Sec
72	- PUMP COUPLING END VERT	.142 In/Sec
73	- PUMP COUPLING END AXIAL	.059 In/Sec
81	- PUMP IMPELLER END HORIZ	.066 In/Sec
82	- PUMP IMPELLER END VERT	.077 In/Sec
P42-4D	- CENTRIFUGAL HOT OIL PUMP 5HP	(10-Oct-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.019 In/Sec
12	- MOTOR OUTBOARD VERT	.026 In/Sec
21	- MOTOR INBOARD HORIZ	.055 In/Sec
22	- MOTOR INBOARD VERT	.013 In/Sec
23	- MOTOR INBOARD AXIAL	.036 In/Sec
71	- PUMP COUPLING END HORIZ	.041 In/Sec
72	- PUMP COUPLING END VERT	.019 In/Sec
73	- PUMP COUPLING END AXIAL	.043 In/Sec
81	- PUMP IMPELLER END HORIZ	.023 In/Sec
82	- PUMP IMPELLER END VERT	.042 In/Sec
P48-7A	- ROTOJET HIGH PRESS PUMP 15HP	(10-Oct-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.133 In/Sec
12	- MOTOR OUTBOARD VERT	.318 In/Sec
21	- MOTOR INBOARD HORIZ	.165 In/Sec
22	- MOTOR INBOARD VERT	.472 In/Sec
23	- MOTOR INBOARD AXIAL	.492 In/Sec
71	- PUMP CPLG END HORIZ	.399 In/Sec
72	- PUMP CPLG END VERT	.227 In/Sec
73	- PUMP CPLG END AXIAL	.156 In/Sec
81	- PUMP OPP END HORIZ	.607 In/Sec
82	- PUMP OPP END VERT	.343 In/Sec
R48-2	- AGITATOR GEARBOX FAULK 15HP	(10-Oct-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.475 In/Sec
12	- MOTOR OUTBOARD VERT	.378 In/Sec
21	- MOTOR INBOARD HORIZ	.257 In/Sec
22	- MOTOR INBOARD VERT	.259 In/Sec
23	- MOTOR INBOARD AXIAL	.123 In/Sec
31	- GEARBOX INPUT SHAFT-INBD HOR	.223 In/Sec
32	- GEARBOX INPUT SHAFT INBD VERT	.201 In/Sec
33	- GEARBOX INPUT SHAFT INBD AXIAL	.181 In/Sec
41	- GEARBOX INPUT SHAFT OUTBD HOR	.253 In/Sec
42	- GEARBOX INPUT SHAFT OUTBD VERT	.221 In/Sec
C53-1A-050	- C1-A H2 COMPRESSOR	(10-Oct-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.065 In/Sec
12	- MOTOR OUTBOARD VERT	.029 In/Sec
21	- MOTOR INBOARD HORIZ	.093 In/Sec
22	- MOTOR INBOARD VERT	.065 In/Sec
23	- MOTOR INBOARD AXIAL	.045 In/Sec
71	- PUMP CPLG END HORIZ	.113 In/Sec
72	- PUMP CPLG END VERT	.014 In/Sec

73	- PUMP CPLG END AXIAL	.070 In/Sec
81	- PUMP OPP END HORIZ	.106 In/Sec
82	- PUMP OPP END VERT	.021 In/Sec

C53-301A - C-301A RECIP COMPRESSOR		(10-Oct-19)
OVERALL LEVEL		
11	- MOTOR OUTBOARD HORIZ	.090 In/Sec
12	- MOTOR OUTBOARD VERT	.072 In/Sec
21	- MOTOR INBOARD HORIZ	.086 In/Sec
22	- MOTOR INBOARD VERT	.117 In/Sec
23	- MOTOR INBOARD AXIAL	.097 In/Sec
71	- CRANKSHAFT DRIVE END HORIZ	.126 In/Sec
72	- CRANKSHAFT DRIVE END VERT	.080 In/Sec
73	- CRANKSHAFT DRIVE END AXIAL	.182 In/Sec
81	- CRANKSHAFT OPP END HORIZ	.102 In/Sec
82	- CRANKSHAFT OPP END VERT	.067 In/Sec

P53-301 - ANSI CENTRIFUGAL PUMP 50 HP		(10-Oct-19)
OVERALL LEVEL		
11	- MOTOR OUTBOARD HORIZ	.089 In/Sec
12	- MOTOR OUTBOARD VERT	.115 In/Sec
21	- MOTOR INBOARD HORIZ	.079 In/Sec
22	- MOTOR INBOARD VERT	.103 In/Sec
23	- MOTOR INBOARD AXIAL	.117 In/Sec
71	- PUMP CPLG END HORIZ	.071 In/Sec
72	- PUMP CPLG END VERT	.054 In/Sec
73	- PUMP CPLG END AXIAL	.042 In/Sec
81	- PUMP OPP END HORIZ	.045 In/Sec
82	- PUMP OPP END VERT	.038 In/Sec

R55-102 - REACTOR AGIT R-102		(10-Oct-19)
OVERALL LEVEL		
11	- MOTOR OUTBOARD HORIZ	.120 In/Sec
12	- MOTOR OUTBOARD VERT	.184 In/Sec
21	- MOTOR INBOARD HORIZ	.111 In/Sec
22	- MOTOR INBOARD VERT	.306 In/Sec
23	- MOTOR INBOARD AXIAL	.184 In/Sec
31	- GEARBOX INPUT SHAFT-INBD HOR	.089 In/Sec
32	- GEARBOX INPUT SHAFT INBD VERT	.082 In/Sec
33	- GEARBOX INPUT SHAFT INBD AXIAL	.132 In/Sec
41	- GEARBOX INPUT SHAFT OUTBD HOR	.137 In/Sec
42	- GEARBOX INPUT SHAFT OUTBD VERT	.100 In/Sec
51	- GEARBOX OUTPUT SHAFT TOP PERP	.080 In/Sec
51L	- GEARBOX OUTPUT SHAFT TOP PERP	.068 In/Sec
52	- GEARBOX OUTPUT SHAFT TOP MA	.084 In/Sec
71	- GEARBOX OUTPUT SHAFT BOT PERP	.066 In/Sec

R55-104 - REACTOR AGIT R-104 (B55)		(10-Oct-19)
OVERALL LEVEL		
11	- MOTOR OUTBOARD HORIZ	.051 In/Sec
12	- MOTOR OUTBOARD VERT	.033 In/Sec
21	- MOTOR INBOARD HORIZ	.048 In/Sec
22	- MOTOR INBOARD VERT	.030 In/Sec
23	- MOTOR INBOARD AXIAL	.022 In/Sec
31	- GEARBOX INPUT SHAFT-INBD HOR	.039 In/Sec
32	- GEARBOX INPUT SHAFT INBD VERT	.013 In/Sec
33	- GEARBOX INPUT SHAFT INBD AXIAL	.022 In/Sec

41	- GEARBOX INPUT SHAFT OUTBD HOR	.033 In/Sec
42	- GEARBOX INPUT SHAFT OUTBD VERT	.014 In/Sec
51	- GEARBOX OUTPUT SHAFT TOP PERP	.038 In/Sec
51L	- GEARBOX OUTPUT SHAFT TOP PERP	.039 In/Sec
53	- GEARBOX OUTPUT SHAFT TOP VERT	.013 In/Sec
61	- GEARBOX OUTPUT SHAFT MID PERP	.030 In/Sec

R55-106 - REACTOR AGIT R-106		(10-Oct-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.222 In/Sec
12	- MOTOR OUTBOARD VERT	.281 In/Sec
21	- MOTOR INBOARD HORIZ	.207 In/Sec
22	- MOTOR INBOARD VERT	.129 In/Sec
23	- MOTOR INBOARD AXIAL	.288 In/Sec
31	- GEARBOX INPUT SHAFT-INBD HOR	.070 In/Sec
32	- GEARBOX INPUT SHAFT INBD VERT	.057 In/Sec
33	- GEARBOX INPUT SHAFT INBD AXIAL	.087 In/Sec
41	- GEARBOX INPUT SHAFT OUTBD HOR	.119 In/Sec
42	- GEARBOX INPUT SHAFT OUTBD VERT	.042 In/Sec
51	- GEARBOX OUTPUT SHAFT TOP PERP	.089 In/Sec
51L	- GEARBOX OUTPUT SHAFT TOP PERP	.131 In/Sec
53	- GEARBOX OUTPUT SHAFT TOP VERT	.026 In/Sec
71	- GEARBOX OUTPUT SHAFT BOT PERP	.067 In/Sec

C67-51 - AXIAL TWIN SCREW COMPRESSOR		(10-Oct-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.061 In/Sec
12	- MOTOR OUTBOARD VERT	.036 In/Sec
21	- MOTOR INBOARD HORIZ	.045 In/Sec
22	- MOTOR INBOARD VERT	.030 In/Sec
23	- MOTOR INBOARD AXIAL	.044 In/Sec
71	- MALE - CPLG END HORIZ	.137 In/Sec
72	- MALE - CPLG END VERT	.128 In/Sec
73	- MALE-CPLG END AXIAL	.118 In/Sec
81	- MALE- OPP END HORIZ	.176 In/Sec
82	- MALE- OPP END VERT	.155 In/Sec
83	- MALE-OPP END AXIAL	.141 In/Sec
71F	- FEMALE - CPLG END HORIZ	.140 In/Sec
72F	- FEMALE- CPLG END VERT	.101 In/Sec
73F	- FEMALE-CPLG END AXIAL	.111 In/Sec
81F	- FEMALE- OPP END HORIZ	.174 In/Sec
82F	- FEMALE- OPP END VERT	.131 In/Sec
83F	- FEMALE- OPP END AXIAL	.104 In/Sec

P67-54 - HOT OIL CIRC PMP CENT 15HP		(10-Oct-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.231 In/Sec
12	- MOTOR OUTBOARD VERT	.076 In/Sec
21	- MOTOR INBOARD HORIZ	.196 In/Sec
22	- MOTOR INBOARD VERT	.019 In/Sec
23	- MOTOR INBOARD AXIAL	.034 In/Sec
71	- PUMP CPLG END HORIZ	.053 In/Sec
72	- PUMP CPLG END VERT	.021 In/Sec
73	- PUMP CPLG END AXIAL	.025 In/Sec
81	- PUMP OPP END HORIZ	.057 In/Sec
82	- PUMP OPP END VERT	.017 In/Sec

P67-504 - HOT OIL CIRC PMP CENT 50HP (10-Oct-19)
OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZ .013 In/Sec
12 - MOTOR OUTBOARD VERT .031 In/Sec
21 - MOTOR INBOARD HORIZ .022 In/Sec
22 - MOTOR INBOARD VERT .022 In/Sec
23 - MOTOR INBOARD AXIAL .024 In/Sec
71 - PUMP CPLG END HORIZ .057 In/Sec
72 - PUMP CPLG END VERT .039 In/Sec
73 - PUMP CPLG END AXIAL .075 In/Sec
81 - PUMP OPP END HORIZ .037 In/Sec
82 - PUMP OPP END VERT .027 In/Sec

B76-101806 - FD FAN- EAST H2 PLANT (10-Oct-19)
OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZ .173 In/Sec
12 - MOTOR OUTBOARD VERT .273 In/Sec
21 - MOTOR INBOARD HORIZ .137 In/Sec
22 - MOTOR INBOARD VERT .505 In/Sec
23 - MOTOR INBOARD AXIAL .394 In/Sec
71 - FAN SHEAVE END HORIZ .207 In/Sec
72 - FAN SHEAVE END VERT .417 In/Sec
73 - FAN SHEAVE END AXIAL .441 In/Sec
81 - FAN WHEEL END HORIZ .110 In/Sec
82 - FAN WHEEL END VERT .161 In/Sec

B76-103806 - ID FAN- EAST H2 PLANT (10-Oct-19)
OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZ .416 In/Sec
12 - MOTOR OUTBOARD VERT .132 In/Sec
21 - MOTOR INBOARD HORIZ .253 In/Sec
22 - MOTOR INBOARD VERT .270 In/Sec
23 - MOTOR INBOARD AXIAL .370 In/Sec
71 - FAN SHEAVE END HORIZ .294 In/Sec
73 - FAN SHEAVE END AXIAL .281 In/Sec
81 - FAN WHEEL END HORIZ .491 In/Sec

P76-101806 - P101 BFW PUMP-EAST H2 PLANT (10-Oct-19)
OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZ .014 In/Sec
12 - MOTOR OUTBOARD VERT .081 In/Sec
21 - MOTOR INBOARD HORIZ .188 In/Sec
22 - MOTOR INBOARD VERT .044 In/Sec
23 - MOTOR INBOARD AXIAL .020 In/Sec

P76-102806 - P102 BFW PUMP-EAST H2 PLANT (10-Oct-19)
OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZ .065 In/Sec
12 - MOTOR OUTBOARD VERT .095 In/Sec
21 - MOTOR INBOARD HORIZ .044 In/Sec
22 - MOTOR INBOARD VERT .038 In/Sec
23 - MOTOR INBOARD AXIAL .021 In/Sec
71 - PUMP CPLG END HORIZ .030 In/Sec
72 - PUMP CPLG END VERT .042 In/Sec
73 - PUMP CPLG END AXIAL .023 In/Sec
81 - PUMP HIGH SPEED HORIZ .031 In/Sec
82 - PUMP HIGH SPEED VERT .024 In/Sec

P76-103806 - P103 QUENCH PUMP-EAST H2 PLT (10-Oct-19)
OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZ .132 In/Sec
12 - MOTOR OUTBOARD VERT .052 In/Sec
21 - MOTOR INBOARD HORIZ .043 In/Sec
22 - MOTOR INBOARD VERT .052 In/Sec
23 - MOTOR INBOARD AXIAL .064 In/Sec

P76-104806 - P104 QUENCH PUMP-EAST H2 PLT (10-Oct-19)
OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZ .044 In/Sec
12 - MOTOR OUTBOARD VERT .019 In/Sec
21 - MOTOR INBOARD HORIZ .030 In/Sec
22 - MOTOR INBOARD VERT .017 In/Sec
23 - MOTOR INBOARD AXIAL .045 In/Sec

R80-30 - AGITATOR GBX 15HP CHEMINEER (10-Oct-19)
OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZ .069 In/Sec
12 - MOTOR OUTBOARD VERT .136 In/Sec
21 - MOTOR INBOARD HORIZ .105 In/Sec
22 - MOTOR INBOARD VERT .100 In/Sec
23 - MOTOR INBOARD AXIAL .127 In/Sec
31 - GEARBOX INPUT SHAFT-INBD HOR .062 In/Sec
32 - GEARBOX INPUT SHAFT INBD VERT .033 In/Sec
33 - GEARBOX INPUT SHAFT INBD AXIAL .123 In/Sec
41 - GEARBOX INPUT SHAFT OUTBD HOR .067 In/Sec
42 - GEARBOX INPUT SHAFT OUTBD VERT .031 In/Sec
51 - GEARBOX OUTPUT SHAFT TOP N-S .068 In/Sec
61 - GEARBOX OUTPUT SHAFT MID N-S .043 In/Sec

P81-101A - Fire Pump - East (10-Oct-19)
OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZ .114 In/Sec
12 - MOTOR OUTBOARD VERT .066 In/Sec
21 - MOTOR INBOARD HORIZ .102 In/Sec
22 - MOTOR INBOARD VERT .067 In/Sec
23 - MOTOR INBOARD AXIAL .131 In/Sec
71 - PUMP CPLG END HORIZ .107 In/Sec
72 - PUMP CPLG END VERT .133 In/Sec
73 - PUMP CPLG END AXIAL .165 In/Sec
81 - PUMP OPP END HORIZ .133 In/Sec
82 - PUMP OPP END VERT .134 In/Sec

P81-101B - Fire Pump - West (10-Oct-19)
OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZ .136 In/Sec
12 - MOTOR OUTBOARD VERT .110 In/Sec
21 - MOTOR INBOARD HORIZ .204 In/Sec
22 - MOTOR INBOARD VERT .171 In/Sec
23 - MOTOR INBOARD AXIAL .162 In/Sec
71 - PUMP CPLG END HORIZ .257 In/Sec
72 - PUMP CPLG END VERT .245 In/Sec
73 - PUMP CPLG END AXIAL .422 In/Sec
81 - PUMP OPP END HORIZ .235 In/Sec
82 - PUMP OPP END VERT .259 In/Sec

P81-102A	- JOCKEY FIRE PUMP VERTICAL	(10-Oct-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.138 In/Sec
12	- MOTOR OUTBOARD VERT	.095 In/Sec
21	- MOTOR INBOARD HORIZ	.181 In/Sec
22	- MOTOR INBOARD VERT	.113 In/Sec
23	- MOTOR INBOARD AXIAL	.088 In/Sec
B82-101A	- FAN FORCED DRAFT 10HP SOUTH	(10-Oct-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.088 In/Sec
12	- MOTOR OUTBOARD VERT	.119 In/Sec
21	- MOTOR INBOARD HORIZ	.128 In/Sec
22	- MOTOR INBOARD VERT	.180 In/Sec
23	- MOTOR INBOARD AXIAL	.298 In/Sec
B82-102	- INDUCED DRAFT 150 HP	(10-Oct-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZ	.031 In/Sec
12	- MOTOR OUTBOARD VERT	.033 In/Sec
21	- MOTOR INBOARD HORIZ	.038 In/Sec
22	- MOTOR INBOARD VERT	.043 In/Sec
23	- MOTOR INBOARD AXIAL	.037 In/Sec
CHLR67-1N	- 240T TRANE CHILLER NORTH	(10-Oct-19)
		OVERALL LEVEL
11	- HOTOR OUTBOARD HORIZ	.105 In/Sec
12	- HOTOR OUTBOARD VERT	.116 In/Sec
21	- HOTOR INBOARD HORIZ	.068 In/Sec
22	- HOTOR INBOARD VERT	.069 In/Sec
23	- HOTOR INBOARD AXIAL	.045 In/Sec
71	- COMP INBOARD HORIZ	.050 In/Sec
72	- COMP INBOARD VERT	.061 In/Sec
73	- COMP INBOARD AXIAL	.050 In/Sec
81	- COMP OUTBD HORIZ	.071 In/Sec
82	- COMP OUTBD VERT	.096 In/Sec
CHLR67-1W	- 240T TRANE CHILLER WEST	(10-Oct-19)
		OVERALL LEVEL
11	- HOTOR OUTBOARD HORIZ	.026 In/Sec
12	- HOTOR OUTBOARD VERT	.022 In/Sec
21	- HOTOR INBOARD HORIZ	.022 In/Sec
22	- HOTOR INBOARD VERT	.059 In/Sec
23	- HOTOR INBOARD AXIAL	.052 In/Sec
71	- COMP INBOARD HORIZ	.028 In/Sec
72	- COMP INBOARD VERT	.035 In/Sec
81	- COMP OUTBD HORIZ	.032 In/Sec
82	- COMP OUTBD VERT	.050 In/Sec
CHLR67-1E	- 240T TRANE CHILLER EAST	(10-Oct-19)
		OVERALL LEVEL
11	- HOTOR OUTBOARD HORIZ	.091 In/Sec
12	- HOTOR OUTBOARD VERT	.092 In/Sec
13	- HOTOR OUTBOARD AXIAL	.092 In/Sec
21	- HOTOR INBOARD HORIZ	.064 In/Sec
22	- HOTOR INBOARD VERT	.219 In/Sec

71	- COMP INBOARD HORIZ	.069 In/Sec
72	- COMP INBOARD VERT	.099 In/Sec
81	- COMP OUTBD HORIZ	.122 In/Sec
82	- COMP OUTBD VERT	.113 In/Sec

CHLR45-1	- 20T TRANE CHILLER	(10-Oct-19)
		OVERALL LEVEL
11	- HOTOR OUTBOARD HORIZ	.969 In/Sec
12	- HOTOR OUTBOARD VERT	.873 In/Sec
13	- HOTOR OUTBOARD AXIAL	.752 In/Sec
21	- HOTOR INBOARD HORIZ	1.056 In/Sec
22	- HOTOR INBOARD VERT	.536 In/Sec
23	- HOTOR INBOARD AXIAL	.499 In/Sec

Clarification Of Vibration Units:

Vel --> In/Sec PK
