HI-SPEED INDUSTRIAL SERVICE

MILLINGTON, TN

November 23, 2021

Blues City Brewery

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,

David W Shook

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Reportable equipment

Boiler Fan 2
Vibrations are very high in the motor. Velocity overall is still over 1.75”/second peak for radial and 01.3” for axial measurements. Ensure all foot bolts on the motor and all fan bearing bolts are torqued and there is no soft foot. This is more than likely a fan imbalance that is transferring through the motor. Still recommend having fan pulled and shop balanced on a balance stand. **Rated as a Class III Defect.**

Middle Boiler Feed Water Pump
Data shows a shaft speed vibration in the pump. There could be wear causing possible imbalance or looseness. **Rated a Class I Defect.**

Service Water Pump 8
The shaft speed vibrations in the motor radial and axial are still reportable. There are still signs of loose fasteners, structural looseness, possible misalignment, bent shaft, or coupling defects. **Rated a Class II Defect.**

Service Water Pump 7
The vibration data for the pump shows a dominant 2x RPM vibration. This is usually a good indicator of misalignment or shaft/coupling run out. Inspect the shafts and coupling for run out and alignment. Check all fasteners, feet, and the base. **Rated a Class II Defect.**

RO Water Pump 1
Data is collected infrequently on this unit. This pump has two vibrations at 128 and 149 Hz that come into and out of phase causing a beat vibration. There could be wear in the pump, damage, or there could be a flow issue. We recommend further inspection and adjustments of flow related controls, filters, screens, or piping and finally internal inspection if needed. **Rated a Class II Defect.**

RO Water Pump 2
This unit still has a vibration at what appears to be vane pass, (5x RPM, 122 HZ). The vibrations are still almost 0.4”/sec velocity peak in the time waveform now. There could be wear in the pump, or there could be a flow issue. We recommend further inspection and adjustments of flow related controls, filters, screens, or piping. **Rated a Class I Defect.**

2nd Floor South Hot Water Pump
Shaft speed vibration still dominates the motor vibration data at near 0.4” per second velocity peak. A 2x RPM vibration is also present. Inspect the unit base, structure, coupling and fasteners for issues. Have the shaft alignment checked too. **Rated a Class I Defect.**

GF-VP2 GALLERY DA VAC PUMP-SKID 2
Multiple vibrations throughout unit are above 1”/second at shaft speed. Inspect the coupling and alignment first. Check for shaft and coupling for runout and alignment. Inspect the structure, fasteners, and feet. The pump could be worn also. **Rated a Class III Defect.**

GF-CP2 GALLERY DA CIRC PUMP- SKID 2
Motor vertical shows a 1x and smaller 2x RPM vibration; however this unit is close to the vacuum pump that has a very high vibration. Check the unit fasteners, feet, and structure. Impeller could be worn. **Rated a Class II Defect.**

WORTA-WORT TRANSFER PUMP A
The pump axial vibration at shaft speed has been slowly increasing over time. Check the shaft alignment as well as the coupling for wear and run out. Check unit fasteners, feet, and base. **Rated a Class I Defect.**

Sugar Tank Viking Pump #3
The pump data still shows slight non-synchronous harmonic peaks in the data. This could indicate distress in the unit bearings. We will watch for changes. **Rated a Class I Defect.**

Sugar Tank Viking Pump #4
Gearbox data shows multiple low level harmonics that could be early signs of wear and looseness. The gearbox to pump coupling ring seemed to be out of position. Inspect the coupling as soon as possible **Rated a Class III Defect.**
Perform oil analysis of the gearbox lubricants. **Rated a Class II Defect.**

Administration HVAC Hot Water Pump
Motor and pump vibration is still 0.4”/second velocity peak overall. There could still be an alignment or coupling issue. Inspect the coupling and check the shaft alignment. **Rated a Class I Defect.**

Filter Cellar Chill Water Circulator Pump 1
Vibrations are still at 2x line frequency. Unbalanced electrical phases or poor connections can cause the vibration since it changes in amplitude over time. Perform a motor phase and voltage analysis up to and including PDMA if necessary. **Rated a Class I Defect.**

W COOL A-CHILL WATER WORT COOL SIDE A (5)
Last data in May with same recommendation.
There appears to be sidebands around shaft speed in the motor. Perform an inspection of the coupling, fasteners, and structure as soon as possible. If nothing is found, we suggest the motor needs to be inspected as well as all electrical connections. Motor replacement should be considered if all else reveals nothing. **Rated a Class III Defect.**

Gov Cellar Cold Glycol Pump #2
Motor data indicates an electrical issue due to a 6x line frequency peak. If this unit is on a drive, it could need adjusting, or replacing. **Rated a Class I Defect.**

Gov Cellar Packaging Cold Glycol Pump #2
Motor vibration data still indicates possible early distress in the bearings. Ensure the bearings are lubricated properly. No other action is suggested. **Rated a Class I Defect.**

Units previously reported but not running this survey

Boiler 3 Fan, Motor Bearings
Bearing defect frequencies are present in the motor vibration data. The acceleration trend has increased this survey. The overalls are above 3 g's RMS. Expect to change out the bearings in the future. **Rated a Class II Defect.**

Boiler 3 Fan, Fan Bearings
The inboard fan bearing shows strong peaks in the acceleration spectrum up around 2500 Hz with peaks around 114 Hz apart. Vibrations are over 4 g's RMS. Expect to change out the bearings in the future. **Rated a Class II Defect.**

Yellow Box Filtered Water Pump
Shaft speed vibration is still evident in the inboard pump horizontal. Inspect the coupling first for signs of wear that could cause imbalance. Check the alignment if the coupling looks good. The pump could be in distress if the coupling and alignment are good. **Rated a Class II Defect.**

Service Water Pump 3
There has been an increase in a 2x shaft speed vibration in the motor and it is the dominant vibration. This could be caused by shaft misalignment, bent shaft, or coupling defects. **Rated a Class I Defect.**

Service Water Pump 5
The unit still has signs of possible misalignment or coupling defects. Check in the near future. The pump also has multiple non-synchronous vibration peaks in the upper frequencies, which we believe to be bearing defects. **Rated a Class II Defect.**

G Cellar Cold Glycol Pump #5
Motor still has a dominant vibration at 4X shaft speed with sidebands or shaft speed harmonics. Inspect for loose fasteners, coupling, and alignment issues. Could be a pump issue too if it has 4 flutes in the impeller. **Rated a Class II Defect.**

Gov Cellar Cold Glycol Pump #3
Motor vibration data indicates possible early distress in the bearings and possibly an air gap issue that could be loading the DE bearing. There was an odd smell of cooking paint and the area near the bearing was excessively hot, especially for the ambient conditions. At this point in time, it is suggested that the motor be replaced and that a precision alignment be performed as well as a soft foot check to ensure the stator housing is not distorted. **Rated a Class III Defect.**

G Cellar 128 NANO Pump
Vibrations at shaft speed are still excessive. Ensure all fasteners are tight and support structure is sound. Check for pipe strain. Make sure coupling is in good shape and shaft alignment is precise. **Rated a Class II Defect.**

G Cellar 129 NANO Pump
Motor bearings have signs of early defects. No action required at this time other than ensuring the bearings have lubrication. **Rated a Class I Defect.**

Abbreviated Last Measurement Summary
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Database: Blues_city.rbm
Station: POWER HOUSE
Report Date: 23-Nov-21 09:06

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD	MACHINE SPEED
AIR COMP 3 - COMPRESSOR #3 - 250HP	(17-Nov-21)		
	OVERALL LEVEL	1-20 KHZ	
11	.135 In/Sec	1.275 G-s	1792.0 RPM
12	.091 In/Sec	.543 G-s	
13	.081 In/Sec	.141 G-s	
21	.098 In/Sec	.828 G-s	
22	.095 In/Sec	.874 G-s	
23	.121 In/Sec	1.183 G-s	
71	.116 In/Sec	.888 G-s	3655.7 RPM
72	.061 In/Sec	.572 G-s	
73	.135 In/Sec	.736 G-s	
81	.070 In/Sec	.547 G-s	
82	.093 In/Sec	.518 G-s	
83	.112 In/Sec	.611 G-s	
AIR COMP 5 - COMPRESSOR #5	(17-Nov-21)		
	OVERALL LEVEL	1-20 KHZ	
11	.094 In/Sec	.463 G-s	1788.0 RPM
12	.065 In/Sec	.394 G-s	
13	.114 In/Sec	.462 G-s	
21	.169 In/Sec	.755 G-s	
22	.089 In/Sec	.513 G-s	
23	.114 In/Sec	.662 G-s	

71	.161 In/Sec	.699 G-s	1785.0 RPM
72	.098 In/Sec	.535 G-s	
73	.177 In/Sec	1.006 G-s	
81	.181 In/Sec	.291 G-s	
82	.051 In/Sec	.853 G-s	
83	.128 In/Sec	.399 G-s	

AIR COMP 6 - COMPRESSOR #6 (17-Nov-21)

	OVERALL LEVEL	1-20 KHZ	
11	.158 In/Sec	.741 G-s	1788.0 RPM
12	.123 In/Sec	.300 G-s	
13	.081 In/Sec	.273 G-s	
21	.139 In/Sec	.334 G-s	
22	.091 In/Sec	.361 G-s	
23	.078 In/Sec	.937 G-s	
71	.124 In/Sec	.873 G-s	1785.0 RPM
72	.135 In/Sec	.302 G-s	
73	.161 In/Sec	.776 G-s	
81	.115 In/Sec	.869 G-s	
82	.057 In/Sec	.503 G-s	
83	.135 In/Sec	.661 G-s	

BFWPMIDLE2 - BOILER FEED WATER PUMP MID 2 (17-Nov-21)

	OVERALL LEVEL	1-20 KHZ	
11	.135 In/Sec	.398 G-s	3540.0 RPM
12	.138 In/Sec	.518 G-s	
21	.157 In/Sec	.675 G-s	
22	.113 In/Sec	.403 G-s	
23	.184 In/Sec	.321 G-s	
71	.370 In/Sec	1.078 G-s	
72	.225 In/Sec	1.227 G-s	
73	.077 In/Sec	.210 G-s	
81	.406 In/Sec	1.305 G-s	
82	.115 In/Sec	1.307 G-s	

BFWPSOUTH1 - BOILER FEED WATER PUMP S 1 (17-Nov-21)

	OVERALL LEVEL	1-20 KHZ	
11	.144 In/Sec	.056 G-s	3540.0 RPM
12	.103 In/Sec	.362 G-s	
21	.102 In/Sec	.509 G-s	
22	.089 In/Sec	.351 G-s	
23	.135 In/Sec	.130 G-s	
71	.152 In/Sec	.869 G-s	
72	.167 In/Sec	.840 G-s	
73	.117 In/Sec	.116 G-s	
81	.216 In/Sec	.698 G-s	
82	.075 In/Sec	.682 G-s	

BOILERFAN1 - BOILER FAN #1 (17-Nov-21)

	OVERALL LEVEL	1-20 KHZ	
11	.160 In/Sec	.160 G-s	1750.0 RPM
12	.227 In/Sec	.466 G-s	
21	.131 In/Sec	.184 G-s	
22	.095 In/Sec	.117 G-s	
23	.135 In/Sec	.244 G-s	
71	.168 In/Sec	.090 G-s	

BOILERFAN2 - BOILER FAN #2 (17-Nov-21)

	OVERALL LEVEL	1-20 KHZ	
11	.380 In/Sec	.464 G-s	1780.0 RPM
12	.389 In/Sec	.216 G-s	
21	.902 In/Sec	.525 G-s	
22	1.758 In/Sec	.105 G-s	
23	1.323 In/Sec	.208 G-s	

CR PUMP 1 - CARBON RECIRC PUMP (17-Nov-21)

	OVERALL LEVEL	1-20 KHZ	
11	.041 In/Sec	.163 G-s	3545.0 RPM
12	.053 In/Sec	.148 G-s	
21	.051 In/Sec	.269 G-s	
22	.054 In/Sec	.147 G-s	
23	.042 In/Sec	.206 G-s	
71	.033 In/Sec	.134 G-s	
72	.035 In/Sec	.237 G-s	
73	.040 In/Sec	.089 G-s	
81	.023 In/Sec	.240 G-s	
82	.023 In/Sec	.136 G-s	

SW PUMP 8 - SERVICE WATER PUMP 8 (17-Nov-21)

	OVERALL LEVEL	1-20 KHZ	
11	.152 In/Sec	.260 G-s	3545.0 RPM
12	.397 In/Sec	.621 G-s	
21	.110 In/Sec	1.056 G-s	
22	.236 In/Sec	.590 G-s	
23	.607 In/Sec	.265 G-s	
71	.300 In/Sec	.678 G-s	
72	.274 In/Sec	.748 G-s	
73	.108 In/Sec	.594 G-s	
81	.147 In/Sec	.909 G-s	
82	.126 In/Sec	1.189 G-s	

SW PUMP 7 - SERVICE WATER PUMP 7 (17-Nov-21)

	OVERALL LEVEL	1-20 KHZ	
11	.172 In/Sec	.249 G-s	3545.0 RPM
12	.131 In/Sec	.279 G-s	
21	.200 In/Sec	1.016 G-s	
22	.323 In/Sec	.730 G-s	
23	.390 In/Sec	.564 G-s	
71	.720 In/Sec	1.708 G-s	
72	.408 In/Sec	.922 G-s	
73	.415 In/Sec	.862 G-s	
81	.671 In/Sec	2.917 G-s	
82	.343 In/Sec	2.094 G-s	

RO 1 - RO WATER PUMP 1 (17-Nov-21)

	OVERALL LEVEL	1-20 KHZ	
11	.081 In/Sec	.529 G-s	1540.0 RPM
12	.085 In/Sec	.366 G-s	3545.0 RPM
21	.214 In/Sec	.261 G-s	
22	.192 In/Sec	.164 G-s	
23	.130 In/Sec	.321 G-s	
71	.542 In/Sec	.220 G-s	
72	.294 In/Sec	.252 G-s	
73	.356 In/Sec	.088 G-s	

	81	.288 In/Sec	.323 G-s	
	82	.220 In/Sec	.208 G-s	
RO 2	- RO WATER PUMP 2		(17-Nov-21)	
		OVERALL LEVEL	1-20 KHZ	
	11	.111 In/Sec	.466 G-s	3545.0 RPM
	12	.097 In/Sec	.533 G-s	
	21	.104 In/Sec	1.147 G-s	
	22	.103 In/Sec	.756 G-s	
	23	.056 In/Sec	.778 G-s	
	71	.436 In/Sec	.198 G-s	
	72	.139 In/Sec	.317 G-s	
	73	.100 In/Sec	.257 G-s	
	81	.222 In/Sec	.266 G-s	
	82	.222 In/Sec	.638 G-s	
AMMCOMP 2	- AMMONIA COMP - #2		(17-Nov-21)	
		OVERALL LEVEL	1-20 KHZ	
	11	.049 In/Sec	.075 G-s	3592.0 RPM
	12	.068 In/Sec	.018 G-s	
	13	.059 In/Sec	.094 G-s	
	21	.060 In/Sec	.232 G-s	
	22	.083 In/Sec	.044 G-s	
	23	.098 In/Sec	.098 G-s	
	71	.128 In/Sec	.597 G-s	
	72	.130 In/Sec	.557 G-s	
	73	.112 In/Sec	.492 G-s	
	81	.102 In/Sec	1.103 G-s	
	82	.170 In/Sec	1.203 G-s	
	83	.139 In/Sec	.176 G-s	
	71F	.091 In/Sec	.669 G-s	
	72F	.179 In/Sec	.783 G-s	
	73F	.121 In/Sec	.814 G-s	
	81F	.062 In/Sec	1.046 G-s	
	82F	.135 In/Sec	.740 G-s	
	83F	.120 In/Sec	.550 G-s	

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

Abbreviated Last Measurement Summary

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Database: Blues_city.rbm
Station: UPPER FLOORS
Report Date: 23-Nov-21 09:06

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD	MACHINE SPEED
2SHWP	- 2ND FLOOR S. HOT WATER PUMP	(17-Nov-21)	
	OVERALL LEVEL	1-20 KHZ	
11	.119 In/Sec	.403 G-s	3545.0 RPM
12	.371 In/Sec	.759 G-s	
21	.123 In/Sec	.989 G-s	
22	.282 In/Sec	.563 G-s	

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        23               .447 In/Sec       .815 G-s
        71               .129 In/Sec      1.313 G-s
        72               .139 In/Sec       .886 G-s
        73               .097 In/Sec      1.636 G-s
        81               .108 In/Sec      1.683 G-s
        82               .101 In/Sec      1.590 G-s

 GF-VP2     - GALLERY DA VAC PUMP-SKID 2    (17-Nov-21)
                      OVERALL LEVEL     1-20 KHZ
        11               .623 In/Sec       .323 G-s        1770.0 RPM
        12               .905 In/Sec       .570 G-s
        21               .445 In/Sec       .277 G-s
        22              1.494 In/Sec       .320 G-s
        23              1.432 In/Sec       .184 G-s
        71               .313 In/Sec      2.482 G-s        3610.8 RPM
        72              1.843 In/Sec      2.252 G-s
        73               .629 In/Sec      1.517 G-s
        81              1.205 In/Sec      4.911 G-s
        82              1.467 In/Sec      3.207 G-s

 GF-DP2     - GALLERY DA DISCH PUMP-SKID 2  (17-Nov-21)
                      OVERALL LEVEL     1-20 KHZ
        11               .155 In/Sec       .075 G-s        3520.0 RPM
        12               .361 In/Sec       .203 G-s
        21               .199 In/Sec       .312 G-s
        22               .301 In/Sec       .218 G-s
        23               .192 In/Sec       .205 G-s

 GF-CP2     - GALLERY DA CIRC PUMP- SKID 2  (17-Nov-21)
                      OVERALL LEVEL     1-20 KHZ
        11               .198 In/Sec       .411 G-s        3535.0 RPM
        12               .613 In/Sec       .252 G-s
        21               .268 In/Sec       .362 G-s
        22               .733 In/Sec       .627 G-s
        23               .299 In/Sec       .101 G-s

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   Clarification Of Vibration Units:
      Acc      -->  G-s      PK
      Vel      -->  In/Sec   PK                      Abbreviated Last Measurement
Summary
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               Database:  Blues_city.rbm
               Station:   BREWING 1ST FLOOR
               Report Date:  23-Nov-21   09:06

 MEASUREMENT POINT     OVERALL LEVEL       HFD / VHFD      MACHINE SPEED
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             ***  NO DATA Was Found That Meets the Report Specification ***
Abbreviated Last Measurement Summary
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               Database:  Blues_city.rbm
               Station:   BREWING BASEMENT
               Report Date:  23-Nov-21   09:06
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MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD	MACHINE SPEED
WORTA - WORT TRANSFER PUMP A	(17-Nov-21)		
	OVERALL LEVEL	1-20 KHZ	
11	.138 In/Sec	.307 G-s	3565.0 RPM
12	.168 In/Sec	.381 G-s	
21	.163 In/Sec	.414 G-s	
22	.103 In/Sec	.448 G-s	
23	.239 In/Sec	.108 G-s	
71	.133 In/Sec	.576 G-s	
72	.149 In/Sec	.388 G-s	
73	.401 In/Sec	.865 G-s	
81	.071 In/Sec	.677 G-s	
82	.110 In/Sec	.592 G-s	

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

Abbreviated Last Measurement Summary

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Database: Blues_city.rbm
Station: GRAIN TRANSFER
Report Date: 23-Nov-21 09:06

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD	MACHINE SPEED

*** NO DATA Was Found That Meets the Report Specification ***

Abbreviated Last Measurement Summary

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Database: Blues_city.rbm
Station: SUGAR PUMPS
Report Date: 23-Nov-21 09:06

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD	MACHINE SPEED
V3 - SUGAR TANK VIKING PUMP #3	(17-Nov-21)		
	OVERALL LEVEL	1-20 KHZ	
11	.092 In/Sec	.301 G-s	1750.0 RPM
12	.111 In/Sec	.179 G-s	
21	.093 In/Sec	.659 G-s	
22	.107 In/Sec	.559 G-s	
23	.099 In/Sec	.448 G-s	
31	.125 In/Sec	1.602 G-s	
32	.136 In/Sec	.914 G-s	
33	.098 In/Sec	.704 G-s	
61	.122 In/Sec	1.064 G-s	
62	.106 In/Sec	.840 G-s	
63	.097 In/Sec	.418 G-s	
71	.140 In/Sec	.338 G-s	
72	.092 In/Sec	.324 G-s	

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V4          - SUGAR TANK VIKING PUMP #4     (17-Nov-21)
                        OVERALL LEVEL     1-20 KHZ
        11                .090 In/Sec       .352 G-s        1750.0 RPM
        12                .043 In/Sec       .394 G-s
        21                .072 In/Sec       .549 G-s
        22                .062 In/Sec       .581 G-s
        23                .086 In/Sec       .335 G-s
        31                .098 In/Sec      1.825 G-s
        32                .079 In/Sec       .224 G-s
        33                .133 In/Sec      3.449 G-s
        61                .126 In/Sec      2.571 G-s
        62                .074 In/Sec      1.067 G-s
        63                .125 In/Sec       .435 G-s
        71                .198 In/Sec       .381 G-s
        72                .139 In/Sec       .676 G-s

V5          - SUGAR TANK VIKING PUMP #5     (17-Nov-21)
                        OVERALL LEVEL     1-20 KHZ
        11                .176 In/Sec       .165 G-s        1175.0 RPM
        12                .026 In/Sec       .336 G-s
        21                .181 In/Sec       .523 G-s
        22                .053 In/Sec       .271 G-s
        23                .068 In/Sec       .301 G-s
        71                .109 In/Sec       .276 G-s
        72                .067 In/Sec       .609 G-s
        73                .082 In/Sec       .134 G-s

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   Clarification Of Vibration Units:
      Acc      -->  G-s      PK
      Vel      -->  In/Sec   PK                       Abbreviated Last Measurement
Summary
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                Database:  Blues_city.rbm
                Station:   ALCOHOL PUMP ROOM
                Report Date:  23-Nov-21   09:06

 MEASUREMENT POINT     OVERALL LEVEL       HFD / VHFD      MACHINE SPEED
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              ***  NO DATA Was Found That Meets the Report Specification ***
Abbreviated Last Measurement Summary
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                Database:  Blues_city.rbm
                Station:   ADMINISTRATIVE AREA
                Report Date:  23-Nov-21   09:06

 MEASUREMENT POINT     OVERALL LEVEL       HFD / VHFD      MACHINE SPEED
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 HVAC COLD  - HVAC COLD GLYCOL CIRC PUMP    (17-Nov-21)
                        OVERALL LEVEL     1-20 KHZ
        11                .077 In/Sec       .386 G-s        3600.0 RPM
        12                .054 In/Sec       .215 G-s
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21	.120 In/Sec	.430 G-s	
22	.080 In/Sec	.319 G-s	
23	.078 In/Sec	.287 G-s	
71	.183 In/Sec	.448 G-s	
72	.115 In/Sec	.470 G-s	
73	.078 In/Sec	.149 G-s	
81	.243 In/Sec	.778 G-s	
82	.114 In/Sec	.362 G-s	

HVAC HOT - HVAC HOT WATER CIRC PUMP (17-Nov-21)

	OVERALL LEVEL	1-20 KHZ	
11	.193 In/Sec	.259 G-s	3600.0 RPM
12	.223 In/Sec	.469 G-s	
21	.174 In/Sec	.578 G-s	
22	.448 In/Sec	1.064 G-s	
23	.408 In/Sec	.375 G-s	
71	.248 In/Sec	.552 G-s	
72	.384 In/Sec	.522 G-s	
73	.142 In/Sec	.182 G-s	
81	.170 In/Sec	.188 G-s	
82	.185 In/Sec	.216 G-s	

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

Abbreviated Last Measurement Summary

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Database: Blues_city.rbm
Station: FILTER CELLAR
Report Date: 23-Nov-21 09:06

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD	MACHINE SPEED

CHILL 1 - CHILL WATER CIRC PUMP #1 (17-Nov-21)

	OVERALL LEVEL	1-20 KHZ	
11	.255 In/Sec	.551 G-s	3600.0 RPM
12	.185 In/Sec	.754 G-s	
21	.245 In/Sec	.672 G-s	
22	.214 In/Sec	.505 G-s	
23	.231 In/Sec	.996 G-s	
71	.137 In/Sec	.530 G-s	
72	.116 In/Sec	.673 G-s	
73	.180 In/Sec	.342 G-s	
81	.091 In/Sec	.823 G-s	
82	.045 In/Sec	.601 G-s	

W COOL A - CHILL WATER WORT COOL SIDE A (17-Nov-21)

	OVERALL LEVEL	1-20 KHZ	
11	.887 In/Sec	.479 G-s	3600.0 RPM
12	1.104 In/Sec	.885 G-s	
21	.964 In/Sec	1.158 G-s	
22	.685 In/Sec	1.099 G-s	
23	1.040 In/Sec	.378 G-s	
71	.122 In/Sec	.303 G-s	

72	.112 In/Sec	.279 G-s	
73	.100 In/Sec	.575 G-s	
81	.041 In/Sec	.229 G-s	
82	.030 In/Sec	.316 G-s	

WARM GLY 1 - WARM GLYCOL PUMP #1 (17-Nov-21)

	OVERALL LEVEL	1-20 KHZ	
11	.053 In/Sec	.163 G-s	3600.0 RPM
12	.088 In/Sec	.216 G-s	
21	.075 In/Sec	.390 G-s	
22	.133 In/Sec	.309 G-s	
23	.165 In/Sec	.070 G-s	
71	.253 In/Sec	.276 G-s	
72	.194 In/Sec	.222 G-s	
73	.148 In/Sec	.080 G-s	
81	.084 In/Sec	.139 G-s	
82	.087 In/Sec	.166 G-s	

WARM GLY 2 - WARM GLYCOL PUMP #2 (17-Nov-21)

	OVERALL LEVEL	1-20 KHZ	
11	.037 In/Sec	.135 G-s	3600.0 RPM
12	.023 In/Sec	.227 G-s	
21	.063 In/Sec	.259 G-s	
22	.025 In/Sec	.198 G-s	
23	.046 In/Sec	.148 G-s	
71	.025 In/Sec	.055 G-s	
72	.050 In/Sec	.062 G-s	
73	.034 In/Sec	.059 G-s	
81	.025 In/Sec	.095 G-s	
82	.044 In/Sec	.036 G-s	

WARM GLY 3 - WARM GLYCOL PUMP #3 (17-Nov-21)

	OVERALL LEVEL	1-20 KHZ	
11	.024 In/Sec	.404 G-s	3600.0 RPM
12	.030 In/Sec	.187 G-s	
21	.029 In/Sec	.378 G-s	
22	.028 In/Sec	.278 G-s	
23	.043 In/Sec	.150 G-s	
71	.045 In/Sec	.268 G-s	
72	.046 In/Sec	.219 G-s	
73	.047 In/Sec	.041 G-s	
81	.023 In/Sec	.127 G-s	
82	.026 In/Sec	.108 G-s	

WARM GLY 4 - WARM GLYCOL PUMP #4 (17-Nov-21)

	OVERALL LEVEL	1-20 KHZ	
11	.061 In/Sec	.141 G-s	3600.0 RPM
12	.020 In/Sec	.133 G-s	
21	.079 In/Sec	.102 G-s	
22	.059 In/Sec	.171 G-s	
23	.072 In/Sec	.065 G-s	
71	.093 In/Sec	.044 G-s	
72	.126 In/Sec	.041 G-s	
73	.071 In/Sec	.025 G-s	
81	.043 In/Sec	.039 G-s	
82	.054 In/Sec	.053 G-s	

WARM GLY 5 - WARM GLYCOL PUMP #5 (17-Nov-21)

	OVERALL LEVEL	1-20 KHZ	
11	.043 In/Sec	.129 G-s	3600.0 RPM
12	.023 In/Sec	.219 G-s	
21	.029 In/Sec	.259 G-s	
22	.035 In/Sec	.220 G-s	
23	.040 In/Sec	.141 G-s	
71	.031 In/Sec	.326 G-s	
72	.032 In/Sec	.320 G-s	
73	.078 In/Sec	.329 G-s	
81	.058 In/Sec	.453 G-s	
82	.035 In/Sec	.279 G-s	

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

Abbreviated Last Measurement Summary

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Database: Blues_city.rbm
Station: GOVERNMENT CELLAR
Report Date: 23-Nov-21 09:06

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD	MACHINE SPEED

COLD GLY 1 - COLD GLYCOL PUMP #1 (17-Nov-21)

	OVERALL LEVEL	1-20 KHZ	
11	.238 In/Sec	.159 G-s	3600.0 RPM
12	.144 In/Sec	.514 G-s	
21	.206 In/Sec	.744 G-s	
22	.081 In/Sec	.190 G-s	
23	.199 In/Sec	.217 G-s	
71	.073 In/Sec	.228 G-s	
72	.053 In/Sec	.285 G-s	
73	.048 In/Sec	.081 G-s	
81	.040 In/Sec	.220 G-s	
82	.040 In/Sec	.182 G-s	

COLD GLY 2 - COLD GLYCOL PUMP #2 (17-Nov-21)

	OVERALL LEVEL	1-20 KHZ	
11	.329 In/Sec	.153 G-s	3600.0 RPM
12	.146 In/Sec	.443 G-s	
21	.373 In/Sec	.174 G-s	
22	.304 In/Sec	.282 G-s	
23	.403 In/Sec	.436 G-s	
71	.089 In/Sec	.489 G-s	
72	.126 In/Sec	.790 G-s	
73	.051 In/Sec	.220 G-s	
81	.086 In/Sec	.519 G-s	
82	.090 In/Sec	.155 G-s	

COLD GLY 4 - COLD GLYCOL PUMP #4 (17-Nov-21)

	OVERALL LEVEL	1-20 KHZ	
11	.067 In/Sec	.459 G-s	3600.0 RPM
12	.034 In/Sec	.583 G-s	

21	.054 In/Sec	.754 G-s	
22	.063 In/Sec	.809 G-s	
23	.060 In/Sec	.267 G-s	
71	.058 In/Sec	.438 G-s	
72	.036 In/Sec	.544 G-s	
73	.030 In/Sec	.151 G-s	
81	.027 In/Sec	.111 G-s	
82	.016 In/Sec	.244 G-s	

PACK GLY 2 - PACKAGING COLD GLYCOL PUMP 2 (17-Nov-21)

	OVERALL LEVEL	1-20 KHZ	
11	.033 In/Sec	1.207 G-s	3600.0 RPM
12	.022 In/Sec	1.268 G-s	
21	.040 In/Sec	1.259 G-s	
22	.031 In/Sec	1.085 G-s	
23	.027 In/Sec	1.378 G-s	
71	.029 In/Sec	.366 G-s	
72	.018 In/Sec	.234 G-s	
73	.026 In/Sec	.238 G-s	
81	.019 In/Sec	.508 G-s	
82	.013 In/Sec	.244 G-s	

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

Abbreviated Last Measurement Summary

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Database: Blues_city.rbm
Station: UNUSED / REMOVED
Report Date: 23-Nov-21 09:06

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD	MACHINE SPEED

*** NO DATA Was Found That Meets the Report Specification ***