HI-SPEED INDUSTRIAL SERVICE QualiTest® Diagnostics

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July 12, 2021

St Jude Research Hospital
Memphis TN

The following is a summary of findings from the 2021 annual vibration survey of the AHU Supply Fans and Exhaust Fans at the SCR building. Please let us know if there are any questions or comments.

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

Summary

AHU 1-1 SF
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 1-2 SF
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 1-3 SF
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 1-4 SF
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 1-5 SF
Motor vibration is slightly high in the vertical position. Data shows a dominant 1 x rpm vibration. This is likely due to loose or flexible motor base. For now, ensure motor base fasteners and frame are tight. Slide clamps also should be checked for looseness. Rated as a **CLASS I** defect.

AHU 1-6 SF
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 1 EF1
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 1 EF2
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 1 EF3
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 2-1 SF
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 2-2 SF
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 2-3 SF
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 2-4 SF
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 2-5 SF
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 2-6 SF
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 2 EF1
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 2 EF2
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 2 EF3
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 3-1 SF
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 3-2 SF
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 3-3 SF
Measured vibration data is all within acceptable limits. No work is recommended at this time.

Lab EF1
Measured vibration data is all within acceptable limits. No work is recommended at this time.

Lab EF2
Motor has some high vibration. The motor base and frame seem to be flexible which may be contributing to this vibration. Also, the idler pulley seems to be worn which may also add to this vibration. Ensure pulleys are not worn/misaligned and ensure belts are not worn and properly tightened. Rated as a **CLASS II** defect.

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Abbreviated Last Measurement Summary
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              Database:  stjude~1.rbm
              Station:   SRC
              Route No.  1:  SRC

     MEASUREMENT POINT              OVERALL LEVEL        HFD / VHFD
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     SF1-1       - AHU 1-1                        (06-Jul-21)
                                   OVERALL LEVEL      1 - 20 KHz
            MOH                     .052 In/Sec        .132 G-s
            MOV                     .061 In/Sec        .188 G-s
            MIH                     .080 In/Sec        .241 G-s
            MIV                     .103 In/Sec        .273 G-s
            MIA                     .048 In/Sec        .223 G-s

     SF1-2       - AHU 1-2                        (06-Jul-21)
                                   OVERALL LEVEL      1 - 20 KHz
            MOH                     .042 In/Sec        .087 G-s
            MOV                     .076 In/Sec        .251 G-s
            MIH                     .046 In/Sec        .203 G-s
            MIV                     .072 In/Sec        .326 G-s
            MIA                     .048 In/Sec        .135 G-s

     SF1-3       - AHU 1-3                        (06-Jul-21)
                                   OVERALL LEVEL      1 - 20 KHz
            MOH                     .043 In/Sec        .138 G-s
            MOV                     .045 In/Sec        .500 G-s
            MIH                     .044 In/Sec        .587 G-s
            MIV                     .034 In/Sec        .505 G-s
            MIA                     .024 In/Sec        .196 G-s
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SF1-4 - AHU 1-4 (06-Jul-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.047 In/Sec	.175 G-s
MOV	.108 In/Sec	.297 G-s
MIH	.058 In/Sec	.324 G-s
MIV	.058 In/Sec	.463 G-s
MIA	.066 In/Sec	.267 G-s

SF1-5 - AHU 1-5 (06-Jul-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.069 In/Sec	.224 G-s
MOV	.357 In/Sec	.294 G-s
MIH	.068 In/Sec	.227 G-s
MIV	.296 In/Sec	.405 G-s
MIA	.212 In/Sec	.307 G-s

SF1-6 - AHU 1-6 (06-Jul-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.061 In/Sec	.296 G-s
MOV	.081 In/Sec	.346 G-s
MIH	.050 In/Sec	.256 G-s
MIV	.064 In/Sec	.382 G-s
MIA	.057 In/Sec	.202 G-s

EF1-1 - AHU 1 EF1 (06-Jul-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.052 In/Sec	.594 G-s
MOV	.038 In/Sec	.598 G-s
MIH	.052 In/Sec	.516 G-s
MIV	.056 In/Sec	.675 G-s
MIA	.076 In/Sec	.155 G-s

EF1-2 - AHU 1 EF2 (06-Jul-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.081 In/Sec	.615 G-s
MOV	.081 In/Sec	.457 G-s
MIH	.055 In/Sec	.404 G-s
MIV	.043 In/Sec	.735 G-s
MIA	.074 In/Sec	.234 G-s

EF1-3 - AHU 1 EF3 (06-Jul-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.058 In/Sec	.731 G-s
MOV	.057 In/Sec	.744 G-s
MIH	.052 In/Sec	.512 G-s
MIV	.043 In/Sec	.648 G-s
MIA	.060 In/Sec	.269 G-s

SF2-1 - AHU 2-1 (06-Jul-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.076 In/Sec	.120 G-s
MOV	.041 In/Sec	.198 G-s
MIH	.048 In/Sec	.205 G-s
MIV	.081 In/Sec	.229 G-s
MIA	.041 In/Sec	.108 G-s

SF2-2 - AHU 2-2 (06-Jul-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.034 In/Sec	.152 G-s
MOV	.043 In/Sec	.343 G-s
MIH	.028 In/Sec	.147 G-s
MIV	.026 In/Sec	.217 G-s
MIA	.040 In/Sec	.097 G-s

SF2-3 - AHU 2-3 (06-Jul-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.052 In/Sec	.136 G-s
MOV	.061 In/Sec	.261 G-s
MIH	.043 In/Sec	.124 G-s
MIV	.049 In/Sec	.282 G-s

	MIA	.027 In/Sec	.101 G-s
SF2-4	- AHU 2-4	(06-Jul-21)	
		OVERALL LEVEL	1 - 20 KHz
	MOH	.047 In/Sec	.114 G-s
	MOV	.055 In/Sec	.267 G-s
	MIH	.047 In/Sec	.152 G-s
	MIV	.066 In/Sec	.519 G-s
	MIA	.039 In/Sec	.159 G-s
SF2-5	- AHU 2-5	(06-Jul-21)	
		OVERALL LEVEL	1 - 20 KHz
	MOH	.041 In/Sec	.291 G-s
	MOV	.057 In/Sec	.371 G-s
	MIH	.053 In/Sec	.276 G-s
	MIV	.045 In/Sec	.263 G-s
	MIA	.029 In/Sec	.413 G-s
SF2-6	- AHU 2-6	(06-Jul-21)	
		OVERALL LEVEL	1 - 20 KHz
	MOH	.022 In/Sec	.126 G-s
	MOV	.021 In/Sec	.370 G-s
	MIH	.035 In/Sec	.271 G-s
	MIV	.035 In/Sec	.397 G-s
	MIA	.032 In/Sec	.141 G-s
EF2-1	- AHU 2 EF1	(06-Jul-21)	
		OVERALL LEVEL	1 - 20 KHz
	MOH	.285 In/Sec	.367 G-s
	MOV	.267 In/Sec	.668 G-s
	MIH	.225 In/Sec	1.025 G-s
	MIV	.190 In/Sec	.254 G-s
	MIA	.085 In/Sec	.239 G-s
EF2-2	- AHU 2 EF2	(06-Jul-21)	
		OVERALL LEVEL	1 - 20 KHz
	MOH	.067 In/Sec	.184 G-s
	MOV	.122 In/Sec	.578 G-s
	MIH	.079 In/Sec	.256 G-s
	MIV	.052 In/Sec	.394 G-s
	MIA	.066 In/Sec	.149 G-s
EF2-3	- AHU 2 EF3	(06-Jul-21)	
		OVERALL LEVEL	1 - 20 KHz
	MOH	.062 In/Sec	.312 G-s
	MOV	.043 In/Sec	.764 G-s
	MIH	.041 In/Sec	.151 G-s
	MIV	.052 In/Sec	.535 G-s
	MIA	.051 In/Sec	.261 G-s
SF3-1	- AHU 3-1	(06-Jul-21)	
		OVERALL LEVEL	1 - 20 KHz
	MOH	.021 In/Sec	.205 G-s
	MOV	.038 In/Sec	.280 G-s
	MIH	.040 In/Sec	.329 G-s
	MIV	.031 In/Sec	.239 G-s
SF3-2	- AHU 3-2	(06-Jul-21)	
		OVERALL LEVEL	1 - 20 KHz
	MOH	.034 In/Sec	.255 G-s
	MOV	.032 In/Sec	.391 G-s
	MIH	.020 In/Sec	.495 G-s
	MIV	.035 In/Sec	.487 G-s
SF3-3	- AHU 3-3	(06-Jul-21)	
		OVERALL LEVEL	1 - 20 KHz
	MOH	.032 In/Sec	.120 G-s
	MOV	.039 In/Sec	.429 G-s
	MIH	.029 In/Sec	.554 G-s
	MIV	.035 In/Sec	.499 G-s

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SF3-4       - AHU 3-4                        (06-Jul-21)
                                  OVERALL LEVEL      1 - 20 KHz
            MOH                    .023 In/Sec        .352 G-s
            MOV                    .035 In/Sec        .518 G-s
            MIH                    .023 In/Sec        .150 G-s
            MIV                    .033 In/Sec        .455 G-s

LEXF1       - LAB EXHAUST FAN 1              (06-Jul-21)
                                  OVERALL LEVEL      1 - 20 KHz
            MOH                    .270 In/Sec        .526 G-s
            MIH                    .266 In/Sec        .173 G-s
            MIA                    .349 In/Sec        .119 G-s
            FIH                    .172 In/Sec        .317 G-s
            FOH                    .123 In/Sec        .129 G-s

LEXF2       - LAB EXHAUST FAN 2              (06-Jul-21)
                                  OVERALL LEVEL      1 - 20 KHz
            MOH                    .443 In/Sec        .259 G-s
            MIH                    .524 In/Sec        .177 G-s
            MIA                    .470 In/Sec        .191 G-s
            FIH                    .207 In/Sec        .266 G-s
            FOH                    .180 In/Sec        .267 G-s

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   Clarification Of Vibration Units:
      Acc       -->  G-s       RMS
      Vel       -->  In/Sec    PK
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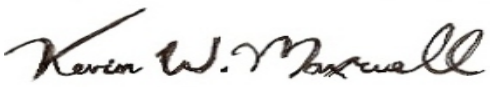
As always, it has been a pleasure to serve St. Jude Research Hospital. If there are any comments or questions, do not hesitate to contact us.

Sincerely,



ISO Certified Vibration Analyst, Category III

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