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August 10, 2020

St Jude Research Hospital
Memphis TN

The following is a summary of findings from the semi-annual vibration survey of the EF's and AHU's at the IRC (Pinkel) 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

IRC Building Air Handlers

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

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

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

AHU 4
Vibration has increased this survey. Data shows a high vibration below 1 x rpm in the spectrum. This is most likely caused by air turbulence. We will monitor this closely. Rated as a **CLASS I** defect.

AHU 5
Vibration has increased this survey. Data shows a high vibration below 1 x rpm in the spectrum. This is most likely caused by air turbulence. We will monitor this closely. Rated as a **CLASS I** defect.

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

AHU 7
Vibration data of the motor indicates defects are present in the motor bearings. This does not appear to be severe at this time. Defects may be due to electrical fluting of the bearings. For now, ensure motor bearings are greased as we will continue to monitor this issue closely. Rated as a **CLASS II** defect.

AHU 8
Data of the motor is showing slight defects are present in the motor bearings. This does not appear to be severe at this time. Defects are likely due to electrical fluting of the bearings. For now, ensure motor bearings are greased as we will continue to monitor closely. Rated as a **CLASS II** defect.

AHU 9
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 10
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 11
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 12
Unit was not in service during the survey. We plan to check this unit as our scheduling allows.

AHU 13
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 14
Data of the motor is showing defects are present in the motor bearings. This does not appear to be severe at this time. Defects may be due to electrical fluting of the bearings. For now ensure motor bearings are greased as we will continue to monitor the bearing issue closely. Rated as a **CLASS II** defect.

AHU 15
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 16
Vibration has increased this survey. Data shows a high vibration below 1 x rpm in the spectrum. This is most likely caused by air turbulence. We will monitor this closely. Rated as a **CLASS I** defect.

IRC Exhaust Fans

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

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

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

EF 4
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 5
Measured vibration data is all within acceptable limits. No work is recommended at this time.

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

EF 7
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 8
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 9
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 10
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 11
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 12
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 13
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 14
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 15
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 16
Data of the motor axial suggests an issue with the belts or sheaves. Ensure sheaves are aligned properly and have minimal face run-out and inspect belts for defects/wear while ensuring belts are tensioned properly. Ensure all motor fasteners are tight Rated as a **CLASS II** defect.

EF 17
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 18
Unit was not in service during the survey. We plan to check this unit as our scheduling allows.

EF 19
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 20
Data of the motor outboard horizontal suggests an issue with the belts or sheaves. Ensure sheaves are aligned properly and have minimal face run-out and inspect belts for defects/wear while ensuring belts are tensioned properly. Ensure all motor fasteners are tight Rated as a **CLASS II** defect.

EF 21
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 22
Measured vibration data is all within acceptable limits. No work is recommended at this time

EF 23
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 24
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 25
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 26
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 27
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 28
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 29
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 30
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 31
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 32
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 33
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 34
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 35
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 36
Data of the outboard fan bearing is showing signs of looseness/wear of the bearing. For now ensure all fasteners are tight and bearing collar is tight on the shaft. Rated as a **CLASS II** defect.

EF 37
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 38
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 39
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 40
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 41
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 42
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 43
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 44
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 45
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 46
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 47
Data of the motor suggests an issue with the belts or sheaves. Ensure sheaves are aligned properly and have minimal face run-out and inspect belts for defects/wear while ensuring belts are tensioned properly. Ensure all motor fasteners are tight Rated as a **CLASS II** defect.

EF 48
Measured vibration data is all within acceptable limits. No work is recommended at this time

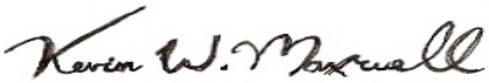
EF 50
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 51
Measured vibration data is all within acceptable limits. No work is recommended at this time.

EF 55
Measured vibration data is all within acceptable limits. No work is recommended at this time.

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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