HI-SPEED INDUSTRIAL SERVICE QualiTest® Diagnostics

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March 29, 2021

St Jude Research Hospital
Memphis TN

The following is a summary of findings from the 2021 annual vibration survey of the EF's and SF's at the 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 SF
Measured vibration data is all within acceptable limits. No work is recommended at this time.

AHU 2 SF
Vibration has increased this survey. Data shows a high vibration below 1 x rpm in the motor velocity spectra. This is likely caused by air turbulence. We will monitor this closely. Rated as a **CLASS I** defect.

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

AHU 4 SF
Vibration has increased this survey. Data shows a high vibration below 1 x rpm in the motor velocity spectra. This is likely caused by air turbulence. There also appears to be electrically related vibrations. Data shows some rotor bar pass and 2 x line frequency harmonics. We will monitor this closely. Rated as a **CLASS I** defect.

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

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

AHU 7 SF
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 SF
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 SF
Vibration has increased this survey. Data shows a high vibration below 1 x rpm in the motor velocity spectra. This is likely caused by air turbulence. We will monitor this closely. Rated as a **CLASS I** defect.

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

AHU 11 SF
Vibration has increased this survey. Data shows a high vibration below 1 x rpm in the motor velocity spectra. This is likely caused by air turbulence. We will monitor this closely. Rated as a **CLASS I** defect.

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

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

AHU 14 SF

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

AHU 16 SF
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
Unit was not in service during the survey. We plan to check this unit as our scheduling allows.

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

EF 18
Measured vibration data is all within acceptable limits. No work is recommended at this time.

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

EF 20
Measured vibration data is all within acceptable limits. No work is recommended at this time.

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 fan bearings is showing signs of defects/wear of the bearings. Bearings may need attention before next year's vibration survey. Rated as a **CLASS II** defect.

EF 37
Unit was not in service during the survey. We plan to check this unit as our scheduling allows.

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.

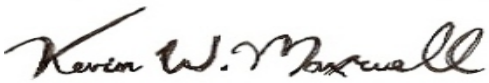
EF 47
Unit was not in service during the survey. We plan to check this unit as our scheduling allows.

EF 48
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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