



MILLINGTON, TN

August 17, 2021

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IFF
Memphis, TN

Subject: August 2021 North Plant Vibration Report

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.

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Observations

P1 DRYER

Product Collector Exhaust Fan 11-1103

Increase in 1 x rpm vibration in the motor verticals. The high vertical vibration could be caused by the unit being mounted on a somewhat flexible structure. High 1 x rpm vibration indicates imbalance of the fan wheel. Fan wheel likely needs to be trim balanced. Rated as a **CLASS II** defect.

North Exhaust Fan 11-1035

Fan axial vibration remains high Spectral data shows several fan rpm harmonics which indicates bearing fit looseness. Fan also likely has build-up or some other type of imbalance. Inspect bearing, fits, and clearances soon and balance fan wheel. Rated as a **CLASS II** defect.

Northeast Blowback Fan 11-1021

Equipment was down this survey however, the following likely still applies: Motor has elevated 1 x rpm vibration at the motor verticals. This is likely due to imbalance. It is difficult to field balance these units due to flexible base and inadequate fasteners to the concrete. It is recommended to replace fan wheel with newly dynamically balance wheel or remove this wheel and dynamically balance the wheel in shop during a downtime. Rated as a **CLASS II** defect.

Southwest Blow-Back Fan 11-1081

Motor data shows some rpm harmonics which indicate mechanical looseness either in the motor fits or fan hub fit. Base bolts being loose can also cause this type of vibration. Fan is also showing signs of imbalance. Inspect motor/fan for looseness and balance as scheduling allows. Rated as a **CLASS II** defect.

P1 CURD

Extraction Tank Discharge Pump 11-4170

Motor continues to have a high 1 x vibration. This is likely due to the fact that the motor is flange mounted and has no foot support. There is a base under the motor, but it appears to be for a previous design. There could also be a coupling issue. Motor needs support and inspect coupling as soon as practical. Rated as a **CLASS III** defect.

C30 #1 Washing Centrifuge 11-4380

Motor and centrifuge drive end axial have increased vibration at 1 x their rpm. This may be a sheave/belt issue. Inspect belts and sheaves for wear/defects. Ensure sheaves are properly aligned with minimal face run-out and belts are tensioned properly. Rated as a **CLASS II** defect.

Curd Pot Wet Grinder 11-4557

Equipment was down this survey, however; if no actions have been taken, then following still applies: Grinder vibration indicates a significant change in vibration. Peakvue and normal data indicate severe defects present within the grinder. Replace grinder ASAP. Rated as a **CLASS IV** defect.

Decanter 3rd Extraction NX438 11-0715

Main drive motor still has high inboard vertical 1 x rpm vibration. Motor at the back of the unit also has high vibration. Bowl may have imbalance causing some of this vibration. Inspect the belts for wear and proper tension, ensure all motor and motor base fasteners are tight, and inspect outboard smaller motor and coupling assemblies for looseness/wear and misalignment SOON. Rated as a **CLASS III** defect.

Concentrator #2 11-4495

1 x rpm vibration has increased to .75 ips-pk in the centrifuge. Centrifuge bearing data is still showing fit looseness is still present. Peakvue data also still indicates non-synchronous vibration with a fundamental of 7.97 orders of the DE bearing indicating a bearing issue in the DE bearing. Concentrator needs a good cleaning out to help with balance. Rated as a **CLASS II** defect.

1st Extraction NX438 11-0714

Motor appears to be missing the rubber isolators on the front motor feet. This is likely the cause of the continuing high 1 x rpm vibration. **There is also still a high vibration the back drive motor. Data of this motor shows looseness either in the motor or coupling. Inspect for these issues ASAP.** Rated as a **CLASS III** defect.

1st Extraction 5400 11-4341

Motor DE bearing data is still showing a non-synchronous peak at 5.2 orders which is likely a harmonic of ball spin frequency. Peakvue and 1-20 kHz. are also showing increases in amplitude which are more indications of a bearing issue. It is recommended to replace the main drive motor at the earliest opportunity. Rated as a **CLASS III** defect.

Bogey Discharge Pump 11-4845

High 2 x rpm vibration in the motor remains. Motor fasteners and coupling should be checked as scheduling allows. Ensure base is properly secured and motor is aligned properly. Rated as a **CLASS II** defect.

P3 ALJET DRYER

FD Vent Filter Exhaust Fan 13-3026

Equipment was down this survey however, the following likely still applies: Outboard fan bearing is showing a high 1 x rpm vibration that appears to fluctuate some each survey. Outboard fan bearing data shows some signs of bearing defects/wear. Bearings should be scheduled for replacement during next down time. Sheaves and belts may also be worn. Fan wheel also needs to be dynamically balanced. Rated as a **CLASS III** defect.

MP3B Feed Dryer Exhaust Fan 13-3418

Equipment was down this survey however, the following likely still applies: Motor and fan 1 x rpm axial vibration has increased again this month. Fan bearings are also showing some signs of wear and lubrication issue. **Inspect all springs on this unit. Springs may be collapsed and/or not set properly.** Inspect fan bearings for looseness and ensure bearings have clean adequate grease. Ensure coupling is greased properly as well. Rated as a **CLASS II** defect.

Feed Loadout Blower 13-3045

Equipment was down this survey however, the following likely still applies: Motor vertical vibration have increased. Data shows high 1 x rpm vibration which may be structurally related. Frame does not appear to be adequate for this size of motor and could be resonant or flexible. Ensure all fasteners are tight and sheaves are aligned properly. Base may need modifications.in the future. Rated as a **CLASS II** defect.

FD Prim Cycl Trans Blower 13-3409

Equipment was down this survey however, the following likely still applies: Motor inboard vertical vibration have increased. Data shows high 1 x rpm vibration which may be structurally related. Frame does not appear to be adequate for this size of motor and could be resonant or flexible. Ensure all fasteners are tight and sheaves are aligned properly. Base may need modifications.in the future. Rated as a **CLASS II** defect.

P3 DRYER

MP1B Blender 11-6650

Gearbox data shows high noise floor in spectral data. Waveform data shows heavy impacting which indicates some defects/wear are present internally in the gearbox. Gearbox will likely need to be replaced soon. Motor also has some increased 1 x rpm vibration. Coupling shot bead may be building up to one side creating an imbalance of the coupling. Rated as a **CLASS III** defect.

MP3B Product Mill Grinder 13-2545

Grinder data is starting to show some non-synchronous peaks in the spectra indicating some bearing defects taking place in the grinder. Severity seems low at this time. We will monitor this closely. Rated as a **CLASS II** defect.

North Baghouse Heater Fan 13-2680

Data indicates bearing issues are present in this unit. Replace fan bearings as scheduling allows. This is rated as a **CLASS II** defect.

P3 Blender 13-2181

Not much change from last month other than an increase in 1 x rpm at MIA. Motor data still shows some electrically related vibrations in the motor. This appears to be 1 x rotor bar pass frequency with 120 Hz. sidebands. This could be caused by internal rotor defects such as loose bars. Online PdMA testing may help determine severity. We are watching this issue closely. Motor also has a 1 x rpm axial vibration that may be coupling related. As far as the gearbox goes, data still shows a high noise floor while amplitudes remain steady. We still suspect a possible gear issue. Rated as a **CLASS II** defect.

P3 CURD

#6 Concentration Centrifuge 13-0610

1 x rpm has increased in centrifuge. Likely cause by imbalance. Centrifuge bearings also have mechanical looseness present according to data. **Clean out unit SOON.** Rated as a **CLASS III** defect

#1 Concentration Centrifuge 13-0279

Centrifuge bearing data shows several harmonics of rpm present which is an indicator of fit looseness. Inspect centrifuge for bearing/fit looseness as soon as time allows. Smaller back-end bearings are also showing some signs of defects/wear. Inspect/repair these bearings also. Also, 1 x rpm has increased in centrifuge. Likely cause by imbalance. Centrifuge bearings also have mechanical looseness present according to data. **Clean out unit SOON** Rated as a **CLASS III** defect.

#2 Concentration Centrifuge 13-0097

Back-end bearings are defective and need to be replaced soon. Centrifuge also has some higher-than-normal vertical vibration. This may be structural but also is likely due to some imbalance of the centrifuge. Replace secondary bearings, clean out centrifuge, ensure sheaves/couplings are in good shape, and ensure all fasteners are tight. Rated as a **CLASS III** defect.

#4 Concentration Centrifuge 13-0299

1 x motor rpm vibration has increased. Newer drive motor has higher acceleration than a newly rebuilt motor should have. Peaks are mainly electrically related. Appears to be rotor bar issue and an online

and offline PdMA testing may clarify this issue. Centrifuge also has some 1 x rpm vibration still with 2, 3, 4, x rpm smaller peaks. Centrifuge bearings likely have some fit looseness. Rated as a **CLASS II** defect.

C-30 #1 Washing Centrifuge 13-0085

Overall vibration of the centrifuge inboard bearing remains high at **1.38 ips pk!** Bowl is still showing some balance. Motor data is also showing some bearing defect frequencies present in the acceleration spectra of the motor inboard bearing. For now, **Unit needs cleaned out soon.** If 1 x rpm remains after clean out then bowl unit may need replacing Rated as a **CLASS III** defect.

C-30 #3 Washing Centrifuge 13-0087

Motor has bearings defects according to vibration data and needs to be changed out as soon as practical. **CHANGE MOTOR SOON** and ensure sheaves are properly aligned. Rated as a **CLASS III** defect.

N-5000 3rd Ext Centrifuge 13-0300

1 x rpm has increased in centrifuge. Likely cause by imbalance. **Clean out unit SOON** Rated as a **CLASS III** defect.

C-30 #4 Washing Centrifuge 13-0278

Bowl is likely out of balance. **Overall vibration is over 1.5 ips-pk. Unit needs to be cleaned out ASAP.** If 1 x rpm remains after clean-out, then the bowl unit may need replacing. Rated as a **CLASS III** defect.

N 5400 Desl 3rd Ext Dis Pump 13-0291

Motor data indicates defects are present in the motor. Replace motor soon. Rated as a **CLASS III** defect.

Flottweg Decanter #1 9302

Overall amplitude has decreased some but M3V still has high has amplitude of .83 ips-pk. Vibration appears to be 1 x decanter speed. This may be sheave or belt related. Inspect sheaves and belts for wear, alignment, and ensure all fasteners are tight. **Also, main drive motor is starting to show signs of bearing defects in the DE bearing. Motor will need attention soon.** Rated as a **CLASS III** defect.

Flottweg Decanter #2 9301

Outboard Decanter Bearing vibration remains high 1 x rpm vibration this month which is likely due to imbalance. Smaller rpm harmonics suggest some fit looseness may be present as well. Unit likely needs to be cleaned and flushed. Rated as a **CLASS III** defect.

Lime Slurry Pump 13-4714

Pump has had a significant increase in 1 x rpm vibration. Pump appears to be missing front foot fasteners. This may be contributing to the high pump vibration. Pump may also have imbalance. At the very least, the pump needs to be fastened down properly and re-aligned. Rated as a **CLASS III** defect.

600 Bogey Vacuum Pump 13-6293

Pump data continues to show signs of defects/wear. Vibration also remains high in the vertical direction of the motor and pump. Base is loose to the concrete which is likely the cause of the high vertical vibration. Replace pump, coupling, and fasten base as soon as practical and realign unit. Rated as a **CLASS III** defect.

300T MONTHLY

300T South Grinder 10-6417

Motor has a high vertical vibration. Dominant vibration remains to be at 1 x motor rpm. It is recommended to go through this unit inspecting all base/foot fasteners, sheaves/belts for issues. Ensure sheaves are not worn, aligned properly with minimal face run-out on the sheave and ensure belts are not worn and properly tensioned. Ensure adjustable motor base is not defective and all fasteners are tight. Rated as a **CLASS II** defect.

300T North Grinder 10-6421

Grinder has a slightly high 1 x rpm vibration. Overall amplitude has decreased down to .5 ips-pk. Grinder assembly may still have some imbalance. Ensure sheaves are not worn, aligned properly with minimal face run-out on the sheave and ensure belts are not worn and properly tensioned. Ensure adjustable motor base is not defective and all fasteners are tight. Rated as a **CLASS II** defect.

West Collector Asp Fan 7907

Equipment was down this survey however, the following likely still applies: Motor remains to have an outboard vertical vibration. This appears to be a resonant condition. It is recommended to perform a coast down test on this unit to find resonant frequencies. This is rated as a **CLASS II** defect.

MAIN PLANT UTILITIES

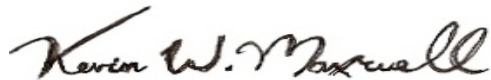
Air Compressor #3 0820

Overall acceleration has increased this survey in the motor. Motor data still shows harmonics of the driven shaft of the air end. This motor does have some higher amplitudes than the other compressors;

therefore, it is recommended to collect trend able vibration data on the compressor and inspect the compressor as time allows. Rated as a **CLASS II** defect.

This completes our assessment of your equipment for this survey. Thank you for your business and do not hesitate to call if you have any comments or questions.

Sincerely,

Handwritten signature of Kevin W. Maxwell in black ink.

QualiTest® Diagnostics

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