HI-SPEED INDUSTRIAL SERVICE

MILLINGTON, TN

June 23, 2021

Victor Foster
IFF
Memphis, TN

Subject: June 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.



7030 Ryburn Drive
Millington, TN 38053
P. 901-873-5300
F. 901-873-5301

## Observations

**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 #2 Washing Centrifuge 11-4375
Motor data is still showing electrical peaks in spectra. This could be an air gap issue, internal connection issue in the stator, rotor issues, or connection issue at the motor junction box. An online and offline PdMA test could help clarify this issue. We will continue to monitor this closely. Rated as a **CLASS II** defect.

### C30 #1 Washing Centrifuge 11-4380
1 x bowl rpm vibration indicates imbalance of the bowl assembly. A clean and flush should lower vibration. Rated as a **CLASS II** defect.

### Curd Pot Wet Grinder 11-4557
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 has a high inboard vertical 1 x rpm vibration. Motor at the back of the unit is also showing signs of looseness. For now, 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. Rated as a **CLASS II** defect for now.

### Concentrator #2 11-4495
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. 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 high 1 x rpm vibration. **There is 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**

There is still a high 2 x rpm vibration in the motor. 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.

## P1 DRYER

**Product Collector Exhaust Fan 11-1103**

Increase in 1 x rpm vibration in the motor verticals. There are also some small 2,3, and 4 x rpm peaks present as well. This could be caused by some type of looseness and or imbalance of the fan wheel. Inspect all fasteners and inspect the fan wheel ensuring fan wheel is not loose on motor shaft. Rated as a **CLASS III** defect.

**Northeast Blowback Fan 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 1081**

***Equipment was down this survey however, the following likely still applies*:** Motor is starting to show 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. Inspect motor/fan for looseness as scheduling allows. Rated as a **CLASS II** defect.

## P3 ALJET DRYER

**FD Vent Filter Exhaust Fan 13-3026**
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**
Motor and fan axial vibration has increased this month. It is unclear if some of this axial vibration is air flow related. Fan bearings are also showing some signs of wear and lubrication issue. 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.

**MP3B Aljet Dryer Inlet Fan**
Outboard fan bearing data is showing signs of either a lubrication issue or bearing wear. For now, it is recommended to perform a visual inspection of the fan bearing ensuring grease is clean and of adequate amount as soon as scheduling allows. Rated as a **CLASS II** defect.

**Feed Loadout Blower 13-3045**
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**
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. Rated as a **CLASS III** defect.

**North Baghouse Heater Fan 2680**
Data indicates bearing issues are present in this unit. Replace fan bearings as scheduling allows. Because of the increased amplitude over one month, this is rated as a **CLASS II** defect.

**P3 Blender 2181**
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**
Motor has a significant increase in electrical vibrations. Appears to stator slot pass which may indicate a winding or connection issue in the motor. We recommended an online and offline PdMA test as soon as practical. Centrifuge bearings also have mechanical looseness present and smaller bearings at the back end of the unit or showing signs of wear/looseness. Inspect unit as time allows. Rated as a **CLASS II** 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.

**#3 Concentration Centrifuge 13-0281**
**MIV remains near 1 ips-pk.** Motor has high 1 x motor rpm vibration with some harmonics and electrical related vibrations (rotor bar pass) which may indicate rotor issue. Data also shows a high sub-harmonic vibration which is very concerning this survey. Online and offline PdMA testing may clarify this issue; however, we recommend that motor be swapped out at earliest opportunity. Rated as a **CLASS III** defect.

**#4 Concentration Centrifuge 13-0282**
New 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 verticals are over 1 ips-pk amplitude. Unit is likely out of balance and needs cleaned out soon.** 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 is higher this month. **Inboard vertical is over 2 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**. Rated as a **CLASS III** defect.

**C-30 #3 Washing Centrifuge 13-0087**
Inboard centrifuge horizontal has had a significant increase in 1 x rpm vibration. Peak amplitude is over 1 ips-pk. This is likely imbalance of the centrifuge but may also be sheave related. **Unit needs cleaned out soon** and ensure sheaves are properly aligned. Rated as a **CLASS III** defect.

**N 5000 3rd Ext Centrifuge 13-0300**
**Centrifuge vibration is over 1 ips-pk**. at CIV. High 1 x rpm vibration suggests imbalance is present in the unit. Clean out centrifuge as scheduling allow. Rated as a **CLASS II** defect.

**C-30 #4 Washing Centrifuge 13-0278**
Bowl is likely out of balance. **Overall vibration is over 1 ips-pk. Unit needs to be cleaned out ASAP.** Rated as a **CLASS III** defect.

**5000 Desludger Discharge 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**
**M3V still has high has amplitude of 1.13 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. Rated as a **CLASS III** defect.

**Flottweg Decanter #2 9301**
Outboard Decanter Bearing vibration still has high 1 x rpm vibration this month. Unit likely needs to be cleaned and flushed. Rated as a **CLASS III** defect.

**Flottweg Decanter #3 9300**
Outboard Decanter Bearing vibration has amplitude over 1 ips in the vertical direction. Unit likely needs to be cleaned and flushed. Rated as a **CLASS III** defect.

**Lime Slurry Pump 13-4714**
(Scheduled for repair on 6/24/21). High pump vibration was not present this survey, however, spectral data of the motor still shows defects are present in the motor bearings. Pump data also shows some signs of bearing issue. Replace motor, pump, and coupling and ensure good alignment. Rated as a **CLASS III** defect.

**600 Bogey Vacuum Pump 13-6293**
Pump data is showing signs of defects/wear. Vibration is also 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 North Grinder 10-6417**
**(I believe an emergency WO was produced for this issue)1 x grinder rpm vibration in the grinder bearings is over 1 ips-pk.** Imbalance is likely present in the grinder assembly. It is also recommended to go through this unit inspecting all fasteners, sheaves/belts for issues. Rated as a **CLASS III** defect.

**300T South Grinder 10-6421**
Motor inboard axial vibration remains high. This may be sheave/structurally related. 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. Motor also has some electrical vibrations. Rated as a **CLASS III** defect.

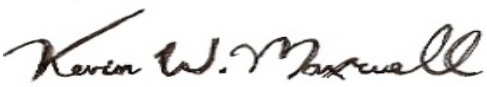
**West Collector Asp Fan 7907**
Motor remains to have an outboard vertical vibration. For now, ensure all fasteners are tight, checks sheaves for misalignment and wear, and ensure belts are in good shape and properly tensioned. Because of the increased motor vibration, this is rated as a **CLASS III** defect.

## MAIN PLANT UTILITIES

**Air Compressor #3 0820**
Motor data 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,



HI-SPEED INDUSTRIAL SERVICE
QualiTest® Diagnostics
Cell: 901-486-4565
Email: kwilliam@gohispeed.com