November 11, 2021

Victor Foster

IFF

Memphis, TN

Subject: November 2021 North Plant Vibration Report

Victor,

Below is a summary from the November 2021 monthly vibration survey of the North Plant.

***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.

**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 needs to be removed and dynamically balanced**. Rated as a **CLASS III** defect.

**11-1035 North Exhaust Fan**

**Fan vibration has increased to over 1 ips on the fan outboard vertical.** This fan has had issues with build-up causing high vibration. Fan bearings are also showing signs of internal looseness. Clean fan soon and check fan bearings for looseness and wear. Rated as a **CLASS III** defect.

**Southwest Blow-Back Fan 11-1081**

Motor data continues to show 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**

**11-4140 Isolate Wet-In Tube Pump**

Motor has elevated 1 x rpm vibration. This motor is flange mounted with no foot support which makes it susceptible for this type of vibration. Process could case the sudden increase in vibration. Coupling may need inspection along with all fasteners. Rated as a **CLASS II** defect.

**Extraction Tank Discharge Pump 11-4170**

MOH still has 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 still has high 1 x rpm vibration in the horizontal direction. This may be a structural or sheave/belt issue. Inspect all motor fasteners/motor base for looseness, 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.

**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.

**1st Extraction NX438 11-0714**

**Main drive motor is starting to show signs of bearing issues.** We will monitor this closely in the surveys to come. Centrifuge has high 1 x rpm vibration likely imbalance of the unit. Feed tube also had a lot of vibration in it. **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.

**P5400 1st Ext. Discharge Pump N 11-4351**

Pump has increased vibration mostly at 1 and 2 x rpm. This likely due to the base having broken bolts. Base needs to be repaired and drive train re-aligned during upcoming TAR. Rated as a **CLASS III** defect.

**Curd Pot Wet Grinder 11-4557**

***Equipment was not in service; however, if no actions have been taken, then the following still applies:*** Grinder data show heavy impacting within the grinder unit. Spectral data shows extremely high noise floor indicating severe defect within the unit. Replace unit ASAP. Rated as a **CLASS IV** defect.

**Bogey Discharge Pump 11-4845**

Motor vibration has increased significantly since replacing the pump. Alignment is good, but data shows some type of looseness in the motor. This may be loose coupling or bad motor fits. Inspect/replace motor/coupling ASAP. Rated as a **CLASS IV** defect.

**Heat Recovery Pump 11-4535**

Pump is currently not on route; however off route analysis showed pump to have severe defects. Also the pump appears to have no oil in oil bulb. Pump needs to be replaced ASAP. **CLASS IV** defect.

**P3 ALJET DRYER**

**Feed Loadout Blower 13-3045**

Motor vertical vibration are high in amplitude. 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**

**MP3B Product Mill Grinder 13-2545**

It appears that the spindle was changed out last month. Unfortunately, new data shows several rpm harmonics in the grinder vertical data which indicate internal looseness. 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 CURD**

**Wet in Pump 13-0030**

Pump 1 x rpm vibration has increased this month in the pump inboard (drive end) horizontal. Increased form .39 in Sep. to .7 in Oct. Pump base is in bad shape. Motor still looks good but pump base needs replacing soon. Rated as a **CLASS II** defect.

**#6 Concentration Centrifuge 13-0610**

There are several issues with this equipment. Data shows some rpm harmonics in the centrifuge bearing indicating internal bearing looseness/wear. Back end bearing also has increased vibration. Mainly a high 1 x rpm vibration with harmonics of rpm and raised noise floor. This indicates internal bearing issues such as wear/looseness. There may also be a base issue at the back end of this unit. Inspect back end small bearings and back end bearing for looseness and wear soon. Unit may need be swapped and rebuilt soon including back end bearing unit. Rated as a **CLASS III** defect.

**#4 Concentration Centrifuge 13-0099**

1 x motor rpm vibration has increased. Drive motor has higher acceleration than newer 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.

**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.

**C30 Precip Tank Feed Pump 13-0084**

Motor data is starting to show signs of motor bearing defects. Motor should be replaced during the next opportunity. Rated as a **CLASS II** defect.

**C30 #4 Washing Centrifuge 13-0278**

Centrifuge vertical reading shows another increase in 1 x rpm vibration of the centrifuge. **Amplitude is 1.2 ips-pk in the CIV.** This likely indicates imbalance of the rotating assembly. Cleaning out unit will likely lower vibration. Rated as a **CLASS III** defect.

**C30 #5 Washing Centrifuge 13-0145**

Motor vibration has increased again this month. Majority of vibration is non-synchronous to the motor and centrifuge. These peaks in the spectra are bearing defect frequencies. **Motor should be replaced ASAP**. Rated as a **CLASS IV** defect.

**1st Ext. Flottweg Centrifuge 13-9302**

Larger drive motor was recently replaced. Motor now has a high 1 x rpm vibration. During visual inspection it was found that the **motor base bolts are loose**. This is likely the cause of the high vibration. Inspect and tighten all fasteners 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**

***Overall vibration is lower therefore this has been degraded in classification.*** However, the following issue still exist: 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 fix base as scheduling allows. Rated as a **CLASS II** defect.

**300T MONTHLY**

**300T North Grinder 10-6421**

Grinder still has high 1 x rpm vibration in the vertical direction. 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**

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.

**E Cooling Tower W Circ. Pump 10-8530**

Motor has had a significant increase in 1 x rpm vibration. Couplings, base bolts, and alignment should be checked ASAP. Rated as a **CLASS IV** defect.

**Well Pump #1 (Southeast) 24-5659**

Motor data is starting to show signs of bearing issues. We will monitor this closely. Rated as a **CLASS II** defect for now.

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,

****





Cell: 901-486-4565

Email: kwilliam@gohispeed.com