

August 15, 2021

IFF

Subject: July MS2P area vibration report

Most of the machines surveyed were found to be in good condition with the exception of the following:

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.

This completes our assessment of your equipment for this survey. Thank you for your business and feel free to call if you have any comments or questions.

Sincerely,

David W Shook

David W. Shook
Senior Reliability Specialists

Hi-Speed Industrial Service
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MS2P

15-3133 #9 CENTRIFUGE DEFOAMER PUMP

Unit data still show sub synchronous vibrations for multiple points. Ensure the structure is sound and all fasteners are tight. Pump could be recirculating due to wear, poor sizing or process conditions. **Rated a Class I Defect.**

15-3137 #8 CENTRIFUGE DEFOAMER PUMP

Motor data shows non-synchronous harmonics. There could possibly be a bad outer race defect. An outside possibility could be a pump issue, but not likely. Inspect the motor installation. Be prepared to change out the motor. **Rated a Class II Defect.**

15-3141 #9 1ST EXT SHARPLE CENTRIFUGE

Centrifuge inboard bearing still shows multiple harmonics in both velocity and acceleration, with acceleration over 24g's RMS overall. The unit belts are also most likely attenuating the amplitudes due to belt tension. The bearings are in bad shape and should be inspected very soon. Clean and Flush unit. Inspect the installation and bearing fasteners also to be sure all fasteners are tight and not causing excessive movement. **Rated a Class IV Defect.**

15-3149 #6 2ND EXT CENT SHARPLES

The centrifuge inboard bearing shows a strong shaft speed vibration and 1 low harmonics. The unit should be cleaned and flushed. This unit has had a high shaft speed vibration for several years. The shaft could have some run out, check with a dial indicator. Check the bearing fasteners and sheave alignment. **Rated a Class III Defect.**

15-3151 #8 1st EXT CENT SHARPLES

Vibration data for the motor shows an increase in non-synchronous vibrations in the bearings. We believe the bearing are in distress. Ensure the bearings are lubricated properly if applicable. Be prepared to change out the motor. **Rated a Class II Defect.**

15-3161 #7 1ST EXT CENT SHARPLES

Vibration data at the time of the survey shows a strong shaft speed vibration in the centrifuge bearings as well as a few harmonics. Clean and flush the centrifuge, inspect the centrifuge and bearing fasteners and ensure the bearings are not cocked or have excessive clearances. **Rated a Class II Defect.**

15-3207 #7 CENTRIFUGE DEFOAMER PUMP

The motor data shows what we believe to be a resonant vibration in multiple measurements if the unit is not on a VFD. Vibrations at 17.7 and 29.4 Hz are dominant. Inspect the unit for structural issues as well as possible pipe strain, recirculation, process issues, or loose or missing fasteners. **Rated a Class II Defect.**

15-3224 MS2P CLARIFIED TANK PUMP

The motor vibration data continues to show a dominant shaft speed vibration. Inspect the installation for loose fasteners, coupling defects and alignment. Look for any other damage in the unit. **Rated a Class II Defect.**

15-3237 E WASHING RESLURRY TANK PUMP

The motor vibration data has increased and continues to show a dominant shaft speed vibration, especially in the axials. Inspect the installation for loose fasteners, coupling defects and alignment. Look for any other damage in the unit. **Rated a Class III Defect.**

15-3246 C-30 #1 WASHING CENTRIFUGE

The motor vibration data continues to show a dominant motor speed vibration, especially in axial measurements. Inspect the installation for loose fasteners, drive train wear, eccentricity, and alignment. Look for any other damage in the unit. **Rated a Class III Defect.**

15-3266 C-30 #3 WASHING CENTRIFUGE

The motor vibration data continues to show motor and centrifuge speed vibrations. Inspect the installation for loose fasteners, drive train wear, eccentricity, and alignment. Look for any other damage or defects in the unit. **Rated a Class II Defect.**

15-3276 C-30 #4 WASHING CENTRIFUGE

The motor vibration data continues to show a dominant centrifuge speed vibration. Inspect the installation for loose fasteners, drive train wear, eccentricity, and alignment. Look for any other damage or defects in the unit. **Rated a Class I Defect.**

15-3289 W WASHING RESLURRY TANK PUMP

Vibration data for the motor shows very strong motor 1x RPM vibrations throughout the motor. Check all fasteners and structures, the coupling or drive train components for defects, wear, eccentricity, and alignment **ASAP. Rated a Class IV Defect.**

15-3296 #4 CONCENTRAT CENT SHARPLES

Centrifuge still has elevated shaft speed vibration in the outboard bearing and a few harmonics. The inboard bearing has primarily a shaft speed vibration. Clean and flush the unit. Check the outboard bearing for slight looseness or for being cocked. **Rated a Class II Defect.**

15-3304 #2 CONCENTRAT CENT SHARPLES

The centrifuge vibration is up at shaft speed. The acceleration has dropped. Clean, flush the centrifuge, and inspect the installation for any deficiencies. **Rated a Class III Defect.**

15-3320 #3 CONCENTRAT CENT SHARPLES

Centrifuge has shaft speed vibration in the bearings including a few low harmonics. Clean and flush the unit. The outboard bearing peakue measurement shows a possible bearing race defect. Check all fasteners. **Rated a Class II Defect.**

15-3475 E VACUUMIZER DISCHARGE PUMP

A 6x RPM vibration still dominates the inboard pump measurement. Vane pass is suspected. Check the pump operational parameters to ensure pump is in proper part of the curve. Check all fasteners also. **Rated a Class II Defect.**

15-3562 E HYDROLISIS DISCHARGE PUMP

Pump still has a in 1x RPM vibration. Inspect the unit for loose fasteners and/or a coupling issue first. The pump impeller could be worn, damaged, or have something stuck on it also. **Rated a Class II Defect.**

15-3843 2P FD FILTER TRANSFER BLOWER

The motor data still shows that possible early bearing defect frequencies are present. There is also no change in blower shaft speed vibrations in the motor. Ensure the motor bearings are lubricated if applicable. Check drive train components for wear, eccentricity, alignment, and ensure all structures and fasteners are good. **Rated a Class II Defect.**

15-3844 MS2P FEED DRYER EXHAUST FAN

Motor data suggests wear in drive train components. Vibrations have increased. Inspect next opportunity. Check fasteners. **Rated a Class II Defect.**

15-3847 MS2P FEED DRYER INLET FAN

Slight 1x RPM vibration in the motor. Inspect installation as time allows. **Rated a Class I Defect.** Motor vibration spectrum looks much better. Was the motor changed out?

15-3848 FEED DRYER COMBUSTION FAN

Very strong vibrations at 25 Hz in motor at almost 2"/second velocity peak overall. Please confirm that database shaft speeds are correct for the motor and fan. Inspect all aspects of the unit **ASAP. Rated a Class IV Defect.**

15-3862 MS2P FEED MILL RCVR VENT FAN

Dominant motor speed vibration in motor. Signs of early bearing defects in the motor also. Ensure motor bearing are lubricated and inspect the installation for defects. **Rated a Class III Defect.**

15-3863 FEED RECYC RECEIVER VENT FAN

Vibration data for the inboard fan bearing still shows what looks to be a strong non-synchronous vibration with multiple harmonics. We suspect outer race bearing defects. Please have the shaft speeds corrected in the database. **Rated a Class II Defect.**

15-4019 CIP CAUSTIC RECIRC HEAT PUMP

Motor still has an elevated 1x RPM axial vibration. Inspect for coupling and alignment issues. Perform a run out check and ensure all fasteners are tight. **Rated a Class II Defect.**

15-4085 #1 CONCENTRATI CENT SHARPLES

Centrifuge bearings shows a shaft speed vibration and multiple low harmonics. Clean and flush the centrifuge. Check the bearing fasteners and make sure the bearings are not cocked and that drive belts and sheaves are aligned and tensioned properly. **Rated a Class II Defect.**

15-4203 HOT WATER PUMP PRESS IND IN

Motor vibrations have increased and still have a strong 1x RPM radial and axial vibration. Inspect for coupling and alignment issues. Perform a run out check and ensure all fasteners are tight. **Rated a Class III Defect.**

15-4460 WASTEWATER HEAT RECOVERY PUMP

The unit shaft speed vibrations have decreased; however there is an increase in a 3x RPM vibration in the pump. We suspect vane pass. Check the pump operational parameters. **Rated a Class II Defect.**

15-8006 MS2P COOLING RING FAN

The inboard fan bearing data shows possible early bearing defects. Ensure adequate lubrication. **Rated a Class I Defect.**

15-8008 MS2P STATIC FLUID BED FAN

Motor and fan have a dominant vibration near what could be 1325 RPM in the motor. Please adjust the data base to reflect accurate motor and fan speeds. Fan bearings show possible early defect frequencies. Inspect the unit fasteners and drive train. **Rated a Class II Defect.**

15-8069 NW & NE BH CONE HEATER FAN

Motor still has a strong fan speed vibration, especially in the axial. Inspect the unit drive train components for wear, eccentricity, and alignment. Ensure all fasteners are tight and structures are sound. **Rated a Class III Defect.**

15-8088 #2SPRAY DRYER S EXHAUST FAN

Possible early defects in the inboard fan bearing. No action required. **Rated a Class I Defect.**

15-8089 SW & SE BH CONE HEATER FAN

Motor has a very high fan speed vibration, especially in the vertical. Inspect the unit drive train components for wear, eccentricity, and alignment. Ensure all fasteners are tight and structures are sound. **Rated a Class II Defect.**

15-8100 MS2P VF BAGHOUSE EXHAUST FAN

Unit has a dominant vibration near 25 Hz in the fan. Please adjust the data base to reflect accurate motor and fan speeds. Inspect the unit. Check all fasteners and drive train components. **Rated a Class I Defect.**

15-9241 W VACUUMIZER PUMP

Pump looks to be variable speed. Recent pump data shows what looks to be multiple harmonics of a possible shaft speed of 331 RPM. Please have the speeds adjusted at the time of data collection to help identify spectral peaks. Pump bearings or fits could be loose. **Rated a Class II Defect.**