HI-SPEED INDUSTRIAL SERVICE QualiTest® Diagnostics

7030 Ryburn Dr. Millington, TN Phone: (901) 873-5300 Fax: (901) 873-5301 www.gohispeed.com

January 13, 2021

Pete Howell
ADM Southern Cotton Oil
Memphis, TN

The following is a summary of findings from the January 2021 quarterly vibration survey at your facility. 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.

Defects

DC Fan
Overall vibration is much lower after repairs were made to this unit. However, the outboard fan bearing is showing some higher frequency non-synchronous peaks in the spectrum. Peaks appear to be non-synchronous which indicate bearing defects. Balance and alignment are good on this unit. The bearing could have been defective out of the box. No immediate actions are recommended **except for putting a couple of shots of grease in the outboard bearing**, and we will continue to monitor this closely. Rated as a **CLASS I** defect.

High Pressure Boiler Fan
Data shows a dominant 1 x rpm vibration which is usually indicative of imbalance. Wheel needs to be inspected for build-up and ensure all fasteners are tight. If all checks good, then a trim balance will be necessary. Rated a **CLASS II** defect.

Bailing Room Main Filter Fan
Motor and Fan vibration data still shows higher than normal 1 x fan rpm vibration with the fan having a very high axial vibration at 1 x rpm. There is also a beat frequency between the motor and fan speed. It is recommended to decrease the speed of the fan if possible. This should help with lowering the overall vibration of the unit. The high axial vibration may be due to sheave issue. **It is recommended to check sheaves for face run out, and misalignment ASAP.** There is still a structural issue and imbalance issue also. Unfortunately, because of the structural issues, this fan does not respond to field balancing. It is recommended (as time allows) to remove fan, steam clean wheel and shaft, and perform an in-depth inspection of the fan and shaft inspecting for cracks and run out at the fan hub. If all looks good, then all trim weights should be removed, and fan should be dynamically balanced with fan sheave on the shaft. Filling the frames with epoxy grout and or concrete will likely help the structural issues. Rated as a **CLASS III** defect.

Huller Room Drum Filter Scalping Fan
Vibration data indicates imbalance of the fan wheel and possible fit looseness of the motor fits and/or fan hub. Unit will need attention soon. Rated as a **CLASS II** defect for now.

1st Cut Shale Fan
Vibration data of the motor and fan shows signs of sheave/belt issue. Sheaves should be checked for misalignment and face run-out as time allows. Ensure belts are good. Rated as a **CLASS II** defect.

Inclined Beater Fan (OVERS)
Vibration is still high especially in the motor. Data suggests structural issues, possible resonance, fan imbalance. For now, inspect structure for cracks, base for soft foot, and ensure all fasteners are tight. Fan wheel is likely out of balance and needs a trim balance. Rated as a **CLASS III** defect.

Boil Reel Rotex Asp. Fan (On mezzanine w/ Seed Cleaner Fans)
Motor data indicates defects present in the motor bearings. Motor will need attention as scheduling allows. Rated as a **CLASS II** defect.

#3 Drum Filter Fan
Motor still has dominant vibration at 1 x motor rpm. This may be due to sheave wear/misalignment, loose or flexible motor base, soft foot, loose fasteners. Inspect for these issues soon. There also appears to be evidence of a rotor issue such as loose or broken rotor bars. We will monitor that issue closely. Also, ensure fan bearings have adequate lubrication. Rated as a **CLASS II** defect.

#3 Drum Filter Scalping Fan
Data suggests fan has imbalance. Inspect fan for build-up as soon as scheduling allows. Rated as a **CLASS II** defect.

South Pellet Cooler Fan

Data of the fan indicates defects within the fan bearings and fan imbalance Bearings should be replaced **SOON**. Ensure fan wheel is clean. A trim balance may be needed after bearing replacement. Rated as a **CLASS III** defect.

North Pellet Cooler Fan

Unit was not in service during this survey; however, if no action have been taken, then the following still applies: Vibration data shows a possible belt or sheave alignment issue. Ensure belts are in good order and tightened properly and sheaves are properly aligned. Rated as a **CLASS II** defect.

South Grinder Mill

Outboard (opposite drive end) end of the mill has a high 1 x rpm vibration. This appears to be caused by some imbalance. For now, ensure hammers aren't unevenly worn and replace if need be. Rated as a **CLASS II** defect.

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Abbreviated Last Measurement Summary
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               Database:  cotton oil.rbm
               Station:   SOUTHERN COTTON OIL
               Report Date:  13-Jan-21   14:46

      MEASUREMENT POINT             OVERALL LEVEL       HFD / VHFD
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      DCFAN      - DC FAN                        (13-Jan-21)
                                    OVERALL LEVEL     1 - 20 KHz
             MOH                     .112 In/Sec       .470 G-s
             MIH                     .103 In/Sec       .216 G-s
             MIA                     .166 In/Sec       .094 G-s
             EIH                     .114 In/Sec       .292 G-s
             EOH                     .114 In/Sec       .550 G-s

      BOILFAN    - BOILER FAN                    (13-Jan-21)
                                    OVERALL LEVEL     1 - 20 KHz
             MOH                     .053 In/Sec       .263 G-s
             MIH                     .059 In/Sec       .368 G-s
             MIA                     .066 In/Sec       .567 G-s

      HPBOILFAN  - HIGH PRESSURE BOILER FAN      (13-Jan-21)
                                    OVERALL LEVEL     1 - 20 KHz
             MOH                     .411 In/Sec       .313 G-s
             MIH                     .341 In/Sec       .447 G-s
             MIA                     .271 In/Sec       .191 G-s

      BRDFMNFAN  - BAILNG ROOM DRUM FLTR M FAN   (13-Jan-21)
                                    OVERALL LEVEL     1 - 20 KHz
             MOH                    1.131 In/Sec       .139 G-s
             MIH                     .950 In/Sec       .567 G-s
             MIA                     .213 In/Sec       .129 G-s
             EIH                     .404 In/Sec       .925 G-s
             EIA                     .909 In/Sec       .382 G-s
             EOH                     .453 In/Sec       .968 G-s
             EIV                     .492 In/Sec      1.316 G-s
             EOV                     .204 In/Sec      1.426 G-s
             EI3                     .859 In/Sec       .146 G-s

      BRDFSFAN   - BR DRUM FILTER SCALPING FAN   (13-Jan-21)
                                    OVERALL LEVEL     1 - 20 KHz
             MOH                     .117 In/Sec       .233 G-s
             MIH                     .117 In/Sec       .206 G-s
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HRDFSFAN - HR DRUM FILTER SCALPING FAN (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.460 In/Sec	.342 G-s
MIH	.254 In/Sec	.590 G-s

1DMFLTRFAN - #1 DRUM FILTER MAIN FAN (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.228 In/Sec	.124 G-s
MIH	.253 In/Sec	.188 G-s
MIA	.201 In/Sec	.145 G-s
EIH	.312 In/Sec	.520 G-s
EIA	.300 In/Sec	.089 G-s
EOH	.332 In/Sec	.515 G-s

1DRMFSFAN - #1 DRUM FILTER SCALPING FAN (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.152 In/Sec	.077 G-s
MIH	.112 In/Sec	.232 G-s

8-10/17-19 - 8-10/17-19 GIN FAN (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.070 In/Sec	.168 G-s
MIH	.118 In/Sec	.317 G-s
MIA	.134 In/Sec	.486 G-s
EIH	.138 In/Sec	.758 G-s
EIA	.203 In/Sec	.306 G-s
EOH	.147 In/Sec	.973 G-s

11-16 FAN - 11-16 GIN FAN (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.091 In/Sec	.252 G-s
MIH	.115 In/Sec	.378 G-s
MIA	.101 In/Sec	.209 G-s
EIH	.210 In/Sec	.571 G-s
EIA	.171 In/Sec	.126 G-s
EOH	.155 In/Sec	.998 G-s

2DRMFLTRFN - #2 DRUM FILTER MAIN FAN (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.082 In/Sec	.123 G-s
MIH	.072 In/Sec	.686 G-s
MIA	.061 In/Sec	.152 G-s
EIH	.209 In/Sec	.340 G-s
EOH	.184 In/Sec	.251 G-s

2DFSFAN - #2 DRUM FILTER SCALPING FAN (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.188 In/Sec	.838 G-s
MIH	.143 In/Sec	.851 G-s
MIA	.113 In/Sec	.470 G-s

1STCUTFAN - 1ST CUT SHALE FAN (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.314 In/Sec	.205 G-s
MIH	.383 In/Sec	.229 G-s
MIA	.229 In/Sec	.120 G-s
EIH	.333 In/Sec	.239 G-s
EIA	.301 In/Sec	.212 G-s

BBASPFAN - BURR BELT ASPIRATION FAN (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.200 In/Sec	1.041 G-s
MIH	.145 In/Sec	.231 G-s
MIA	.164 In/Sec	.147 G-s
EIH	.361 In/Sec	.452 G-s
EOH	.235 In/Sec	.336 G-s

INCLBTRFAN - INCLINED BEATER FAN (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.613 In/Sec	.175 G-s

MIH	.637 In/Sec	.269 G-s
MIA	.229 In/Sec	.194 G-s
EIH	.636 In/Sec	.537 G-s
EOH	.546 In/Sec	.722 G-s

MOTESFAN - MOTES FAN (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.167 In/Sec	.530 G-s
MIH	.138 In/Sec	.692 G-s
MIA	.171 In/Sec	.213 G-s
EIH	.302 In/Sec	.731 G-s
EOH	.150 In/Sec	.481 G-s

#1SEEDCLNF - #1 SEED CLEANER FAN (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.145 In/Sec	.418 G-s
MIH	.116 In/Sec	.095 G-s
MIA	.245 In/Sec	.117 G-s
EIH	.262 In/Sec	.710 G-s
EIA	.395 In/Sec	.174 G-s
EOH	.269 In/Sec	.635 G-s

#2SEEDCLNF - #2 SEED CLEANER FAN (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.146 In/Sec	.414 G-s
MIH	.139 In/Sec	.212 G-s
MIA	.227 In/Sec	.324 G-s
EIH	.165 In/Sec	1.359 G-s
EIA	.309 In/Sec	.181 G-s
EOH	.172 In/Sec	.445 G-s

#3SEEDCLNF - #3 SEED CLEANER FAN (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.227 In/Sec	.762 G-s
MIH	.133 In/Sec	.180 G-s
MIA	.283 In/Sec	.088 G-s
EIH	.263 In/Sec	.326 G-s
EIA	.174 In/Sec	.215 G-s
EOH	.254 In/Sec	.481 G-s

#4SEEDCLNF - #4 SEED CLEANER FAN (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.152 In/Sec	.129 G-s
MIH	.143 In/Sec	.210 G-s
MIA	.163 In/Sec	.151 G-s
EIH	.168 In/Sec	1.161 G-s
EIA	.126 In/Sec	.467 G-s
EOH	.154 In/Sec	.650 G-s

BR&RTXASPF - BOIL REEL & ROTEX ASP. FAN (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.159 In/Sec	1.469 G-s
MIH	.216 In/Sec	.731 G-s
MIA	.137 In/Sec	.539 G-s
EIH	.150 In/Sec	.414 G-s
EIA	.446 In/Sec	.304 G-s
EOH	.172 In/Sec	.437 G-s

#3DFLTMFAN - #3 DRUM FILTER MAIN FAN (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.213 In/Sec	.806 G-s
MIH	.230 In/Sec	.660 G-s
MIA	.120 In/Sec	.090 G-s
EIH	.214 In/Sec	1.984 G-s
EIA	.325 In/Sec	.494 G-s
EOH	.218 In/Sec	1.811 G-s

#3DFLTSFAN - #3 DRUM FILTER SCALPING FAN (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.247 In/Sec	.207 G-s

	MIH	.323 In/Sec	.342 G-s
	MIA	.161 In/Sec	.123 G-s

1-7GINFAN - 1-7 GIN FAN (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.117 In/Sec	.360 G-s
MIH	.135 In/Sec	.297 G-s
MIA	.110 In/Sec	.119 G-s
EIH	.183 In/Sec	.187 G-s
EIA	.247 In/Sec	.175 G-s
EOH	.199 In/Sec	.298 G-s

20-26GNFN - 20-26 GIN FAN (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
EIH	.216 In/Sec	.436 G-s
EIA	.239 In/Sec	.271 G-s
EOH	.187 In/Sec	.313 G-s

PDFMNFAN - PELLETING DRUM MAIN FAN (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.084 In/Sec	.151 G-s
MIH	.079 In/Sec	.117 G-s
MIA	.071 In/Sec	.106 G-s
EIH	.139 In/Sec	1.313 G-s
EIA	.175 In/Sec	.422 G-s
EOH	.096 In/Sec	.486 G-s

PDFSCFAN - PELLETING DRUM SCALPING FAN (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.076 In/Sec	.419 G-s
MIH	.055 In/Sec	.804 G-s

SPCOOLFAN - SOUTH PELLET COOLER FAN (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.336 In/Sec	.235 G-s
MIH	.330 In/Sec	.371 G-s
MIA	.268 In/Sec	.187 G-s
EIH	.426 In/Sec	2.158 G-s
EIA	.534 In/Sec	1.786 G-s
EOH	.532 In/Sec	4.759 G-s

SGRNDMILL - SOUTH GRINDER MILL (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.267 In/Sec	.260 G-s
MIH	.254 In/Sec	.403 G-s
MIA	.275 In/Sec	.305 G-s
EIH	.384 In/Sec	1.573 G-s
EIA	.245 In/Sec	1.080 G-s
EOH	.743 In/Sec	2.039 G-s

MTSCONDDRV - MEATS CONDITIONER DRIVE (13-Jan-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.087 In/Sec	.403 G-s
MIH	.104 In/Sec	.234 G-s
MIA	.085 In/Sec	.144 G-s
GIH	.134 In/Sec	.151 G-s
GIV	.094 In/Sec	.094 G-s
GIA	.155 In/Sec	.030 G-s
GOH	.159 In/Sec	.154 G-s
GOV	.125 In/Sec	.092 G-s
GOA	.138 In/Sec	.083 G-s

Clarification Of Vibration Units:

Acc --> G-s RMS

Vel --> In/Sec PK

As always, it has been a pleasure to serve ADM Southern Cotton Oil. If there are any comments or questions, do not hesitate to contact us.

Sincerely,

ISO Certified Vibration Analyst, Category III

HI-SPEED INDUSTRIAL SERVICE

QualiTest® Diagnostics

Cell: 901-486-4565
Email: kwilliam@gohispeed.com