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March 10th, 2023

South Shelby RNG
Memphis, TN

The following is a summary of findings from the monthly vibration survey that was performed on March 08th, 2023.

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

C-0600 A Feed Gas Compressor

Higher than average 1 x rpm vibration is still present in the compressor section. Vibration is at .8 ips at the drive end of the compressor. Outlet compressor piping has a significant amount of high vibration this survey with amplitude of over 1.4 ips. This is considered very high amplitude. The compressor may have an internal issue such as excessive shaft movement causing high 1 x drive rpm vibration. Piping may also be strained. It is recommended to replace the compressor during next major down time. Ensure piping is not strained. Rated as a **CLASS II** defect.

C-0600 B Feed Gas Compressor

Compressor vertical data is still showing some dominant 1 x, 4 and 8 x male rotor rpm vibration. Internal clearance issue or some other process or loading issue may be causing the 4-x rpm vibration and harmonics of 4 x that also seen in the compressor data. We will continue to monitor closely. Rated as a **CLASS II** defect.

C-0600 C Feed Gas Compressor

Motor has had an increase in 1 x rpm vibration. Compressor continues to have high harmonic vibrations that are related to 4 x the speed of the male rotor. For now, we recommend performing a hot alignment on the unit. Ensure motor does not have soft foot condition. We will continue to monitor these issues closely. Rated as a **CLASS II** defect.

BLR-0200 A, B, C, and D LFG Blowers

These blowers still have high amplitudes of acceleration (high frequency vibrations). Blower outboard axials are typically the highest amplitudes and may be process load related. Multiple harmonics at what appears to be 8 x blower rpm are present and is dominant in blower data. Amplitudes are as high as 80 g's peak to peak which is very high; however, this is likely a characteristic of this blowers' sliding vanes. We will continue to monitor closely. Rated as **CLASS I** defects for now.

Abbreviated Last Measurement Summary

Database: South Shelby RNG.rbm
Area: SOUTH SHELBY PLANT

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD
C-551B - C-551B VACUUM COMPRESSOR B (08-Mar-23)		
	OVERALL LEVEL	1K-20KHz
MOH	.075 In/Sec	.892 G-s
MOV	.061 In/Sec	.814 G-s
MIH	.131 In/Sec	2.978 G-s
MIV	.140 In/Sec	.650 G-s
MIA	.091 In/Sec	.810 G-s
CIA	.208 In/Sec	1.255 G-s
CIH	.155 In/Sec	4.602 G-s
CIV	.235 In/Sec	1.712 G-s
COH	.236 In/Sec	4.114 G-s
COV	.183 In/Sec	2.074 G-s

	COA	.205 In/Sec	2.050 G-s

C-551A - C-551A VACUUM COMPRESSOR A (08-Mar-23)

	OVERALL LEVEL	1K-20KHz
MOH	.062 In/Sec	1.228 G-s
MOV	.066 In/Sec	.558 G-s
MIH	.104 In/Sec	.608 G-s
MIV	.104 In/Sec	.547 G-s
MIA	.095 In/Sec	.274 G-s
CIA	.293 In/Sec	2.378 G-s
CIH	.261 In/Sec	5.196 G-s
CIV	.319 In/Sec	2.294 G-s
COH	.327 In/Sec	6.644 G-s
COV	.358 In/Sec	2.150 G-s
COA	.245 In/Sec	2.543 G-s

C-601B - C-601B N2 RECYCLE COMP B (08-Mar-23)

	OVERALL LEVEL	1K-20KHz
MOH	.116 In/Sec	.521 G-s
MOV	.056 In/Sec	.229 G-s
MIH	.090 In/Sec	.496 G-s
MIV	.065 In/Sec	.338 G-s
MIA	.059 In/Sec	.200 G-s
CIA	.139 In/Sec	1.222 G-s
CIH	.147 In/Sec	1.840 G-s
CIV	.075 In/Sec	2.664 G-s
COH	.153 In/Sec	2.282 G-s
COV	.171 In/Sec	1.816 G-s
COA	.098 In/Sec	1.356 G-s

C-601A - C-601A N2 RECYCLE COMP A (08-Mar-23)

	OVERALL LEVEL	1K-20KHz
MOH	.036 In/Sec	.579 G-s
MOV	.024 In/Sec	.247 G-s
MIH	.072 In/Sec	.951 G-s
MIV	.041 In/Sec	.267 G-s
MIA	.026 In/Sec	.333 G-s
CIA	.156 In/Sec	1.364 G-s
CIH	.115 In/Sec	2.817 G-s
CIV	.139 In/Sec	.996 G-s
COH	.121 In/Sec	1.895 G-s
COV	.114 In/Sec	1.122 G-s
COA	.109 In/Sec	1.367 G-s

C-0600A - C-0600A FEED GAS COMP A (08-Mar-23)

	OVERALL LEVEL	1K-20KHz
MOH	.127 In/Sec	.737 G-s
MOV	.079 In/Sec	.406 G-s
MIH	.124 In/Sec	.838 G-s
MIV	.132 In/Sec	.314 G-s
MIA	.067 In/Sec	.319 G-s
CIA	.346 In/Sec	1.134 G-s
CIH	.794 In/Sec	6.260 G-s
CIV	.554 In/Sec	1.175 G-s
COH	.518 In/Sec	3.969 G-s
COV	.831 In/Sec	1.156 G-s
COA	.401 In/Sec	1.242 G-s
P1	2.052 In/Sec	3.377 G-s

C-0600B - C-0600B FEED GAS COMP B (08-Mar-23)

	OVERALL LEVEL	1K-20KHz
MOH	.132 In/Sec	.460 G-s
MOV	.093 In/Sec	.215 G-s
MIH	.254 In/Sec	1.087 G-s
MIV	.215 In/Sec	.367 G-s
MIA	.073 In/Sec	.342 G-s
CIA	.366 In/Sec	.591 G-s
CIH	.400 In/Sec	4.939 G-s
CIV	.587 In/Sec	.501 G-s
COH	.424 In/Sec	2.461 G-s

	COV	.641 In/Sec	.874 G-s
	COA	.222 In/Sec	.731 G-s
	P1	1.276 In/Sec	.772 G-s

C-0600C - C-0600C FEED GAS COMP C (08-Mar-23)

	OVERALL LEVEL	1K-20KHz
MOH	.451 In/Sec	.387 G-s
MOV	.218 In/Sec	.315 G-s
MIH	.352 In/Sec	.928 G-s
MIV	.133 In/Sec	.330 G-s
MIA	.119 In/Sec	1.011 G-s
CIA	.454 In/Sec	1.114 G-s
CIH	.386 In/Sec	1.790 G-s
CIV	.606 In/Sec	1.517 G-s
COH	.358 In/Sec	2.132 G-s
COV	.721 In/Sec	1.121 G-s
COA	.550 In/Sec	1.192 G-s
P1	.819 In/Sec	1.092 G-s

BLR-0200A - BLR-0200A LFG BLOWER A (08-Mar-23)

	OVERALL LEVEL	1K-20KHz
MOH	.070 In/Sec	1.147 G-s
MOV	.073 In/Sec	.439 G-s
MIH	.065 In/Sec	1.559 G-s
MIV	.111 In/Sec	.408 G-s
MIA	.046 In/Sec	.452 G-s
BIA	.216 In/Sec	4.946 G-s
BIV	.344 In/Sec	5.857 G-s
BOV	.357 In/Sec	5.737 G-s
BOA	.290 In/Sec	6.301 G-s

BLR-0200B - BLR-0200B LFG BLOWER B (08-Mar-23)

	OVERALL LEVEL	1K-20KHz
MOH	.064 In/Sec	1.122 G-s
MOV	.066 In/Sec	.632 G-s
MIH	.083 In/Sec	1.414 G-s
MIV	.076 In/Sec	.274 G-s
MIA	.086 In/Sec	.604 G-s
BIA	.255 In/Sec	3.723 G-s
BIH	.618 In/Sec	13.77 G-s
BIV	.319 In/Sec	3.213 G-s
BOV	.327 In/Sec	5.442 G-s
BOA	.196 In/Sec	5.129 G-s

BLR-0200C - BLR-0200C LFG BLOWER C (08-Mar-23)

	OVERALL LEVEL	1K-20KHz
MOH	.059 In/Sec	1.166 G-s
MOV	.062 In/Sec	.490 G-s
MIH	.065 In/Sec	1.264 G-s
MIV	.089 In/Sec	.399 G-s
MIA	.046 In/Sec	.469 G-s
BIA	.428 In/Sec	7.631 G-s
BIV	.373 In/Sec	6.837 G-s
BOV	.347 In/Sec	3.432 G-s
BOA	.223 In/Sec	3.796 G-s

C-1300 - C-1300 SALES GAS COMP STG 1 (08-Mar-23)

	OVERALL LEVEL	1K-20KHz
MOH	.072 In/Sec	.520 G-s
MOV	.182 In/Sec	.173 G-s
MIH	.063 In/Sec	.400 G-s
MIV	.215 In/Sec	.365 G-s
MIA	.168 In/Sec	.391 G-s
CIA	.170 In/Sec	.832 G-s
CIH	.138 In/Sec	1.139 G-s
CIV	.308 In/Sec	.464 G-s
COH	.207 In/Sec	3.342 G-s
COV	.315 In/Sec	.736 G-s
COA	.127 In/Sec	.819 G-s

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C-1304     - C-1304 SALES GAS COMP STG 2   (08-Mar-23)
                                OVERALL LEVEL     1K-20KHz
          MOH                    .199 In/Sec       .974 G-s
          MOV                    .109 In/Sec      1.127 G-s
          MIH                    .157 In/Sec      1.135 G-s
          MIV                    .083 In/Sec       .931 G-s
          MIA                    .077 In/Sec       .483 G-s
          CIA                    .147 In/Sec       .574 G-s
          CIH                    .189 In/Sec      1.660 G-s
          CIV                    .130 In/Sec       .410 G-s
          COH                    .217 In/Sec      1.060 G-s
          COV                    .145 In/Sec       .415 G-s
          COA                    .153 In/Sec       .403 G-s

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   Clarification Of Vibration Units:
      Acc       -->  G-s       RMS
      Vel       -->  In/Sec    PK
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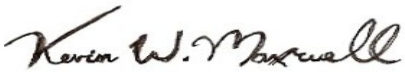
As always, it has been a pleasure to serve South Shelby RNG. If there are any comments or questions, do not hesitate to contact us.

Sincerely,



ISO Certified Vibration Analyst, Category III

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