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May 9th, 2023

South Shelby RNG
Memphis, TN

The following is a summary of findings from the monthly vibration survey that was performed on April 28th, 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

High 1 x rpm vibration is still present in the compressor section but lower in amplitude this survey. Decrease from .8 to .55 ips-pk. 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 perform lift check of compressor shaft 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. Inspect coupling hubs and element also. 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

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

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD
C-551B - C-551B VACUUM COMPRESSOR B (28-Apr-23)		
	OVERALL LEVEL	1K-20KHz
MOH	.083 In/Sec	.851 G-s
MOV	.072 In/Sec	.677 G-s
MIH	.099 In/Sec	1.652 G-s
MIV	.106 In/Sec	.743 G-s
MIA	.079 In/Sec	1.245 G-s
CIA	.220 In/Sec	1.549 G-s
CIH	.132 In/Sec	2.849 G-s
CIV	.221 In/Sec	1.178 G-s
COH	.211 In/Sec	6.406 G-s
COV	.290 In/Sec	2.419 G-s
COA	.200 In/Sec	3.051 G-s
C-551A - C-551A VACUUM COMPRESSOR A (28-Apr-23)		
	OVERALL LEVEL	1K-20KHz
MOH	.063 In/Sec	1.019 G-s
MOV	.084 In/Sec	.698 G-s
MIH	.102 In/Sec	.638 G-s
MIV	.077 In/Sec	.440 G-s
MIA	.062 In/Sec	.348 G-s
CIA	.288 In/Sec	2.027 G-s

	CIH	.234 In/Sec	5.250 G-s
	CIV	.273 In/Sec	2.095 G-s
	COH	.238 In/Sec	6.557 G-s
	COV	.272 In/Sec	3.041 G-s
	COA	.274 In/Sec	3.003 G-s

C-601B - C-601B N2 RECYCLE COMP B (28-Apr-23)

	OVERALL LEVEL	1K-20KHz
MOH	.121 In/Sec	.386 G-s
MOV	.044 In/Sec	.181 G-s
MIH	.110 In/Sec	.671 G-s
MIV	.046 In/Sec	.331 G-s
MIA	.037 In/Sec	.265 G-s
CIA	.124 In/Sec	1.128 G-s
CIH	.128 In/Sec	2.317 G-s
CIV	.133 In/Sec	1.452 G-s

C-601A - C-601A N2 RECYCLE COMP A (28-Apr-23)

	OVERALL LEVEL	1K-20KHz
MOH	.046 In/Sec	1.074 G-s
MOV	.035 In/Sec	.572 G-s
MIH	.074 In/Sec	.829 G-s
MIV	.028 In/Sec	.269 G-s
MIA	.029 In/Sec	.271 G-s
CIA	.095 In/Sec	1.156 G-s
CIH	.111 In/Sec	2.047 G-s
CIV	.154 In/Sec	.919 G-s
COH	.117 In/Sec	1.616 G-s
COV	.096 In/Sec	.822 G-s
COA	.122 In/Sec	.930 G-s

C-0600A - C-0600A FEED GAS COMP A (28-Apr-23)

	OVERALL LEVEL	1K-20KHz
MOH	.151 In/Sec	.620 G-s
MOV	.157 In/Sec	.313 G-s
MIH	.138 In/Sec	.336 G-s
MIV	.128 In/Sec	.318 G-s
MIA	.119 In/Sec	.102 G-s
CIA	.321 In/Sec	1.340 G-s
CIH	.555 In/Sec	7.745 G-s
CIV	.444 In/Sec	1.371 G-s
COH	.341 In/Sec	4.006 G-s
COV	.860 In/Sec	1.343 G-s
COA	.347 In/Sec	1.080 G-s
P1	.927 In/Sec	1.249 G-s

C-0600B - C-0600B FEED GAS COMP B (28-Apr-23)

	OVERALL LEVEL	1K-20KHz
MOH	.195 In/Sec	.419 G-s
MOV	.167 In/Sec	.329 G-s
MIH	.249 In/Sec	.839 G-s
MIV	.168 In/Sec	.294 G-s
MIA	.092 In/Sec	.326 G-s
CIA	.221 In/Sec	.857 G-s
CIH	.329 In/Sec	5.797 G-s
CIV	.576 In/Sec	.453 G-s
COH	.389 In/Sec	2.211 G-s
COV	.688 In/Sec	.485 G-s
COA	.146 In/Sec	.973 G-s
P1	1.276 In/Sec	.570 G-s

C-0600C - C-0600C FEED GAS COMP C (28-Apr-23)

	OVERALL LEVEL	1K-20KHz
MOH	.447 In/Sec	.317 G-s
MOV	.260 In/Sec	.113 G-s
MIH	.418 In/Sec	.694 G-s
MIV	.120 In/Sec	.465 G-s
MIA	.151 In/Sec	.750 G-s
CIA	.366 In/Sec	.933 G-s
CIH	.383 In/Sec	3.686 G-s

	CIV	.849 In/Sec	.929 G-s
	COH	.482 In/Sec	3.657 G-s
	COV	.691 In/Sec	.973 G-s
	COA	.473 In/Sec	1.114 G-s
	P1	.802 In/Sec	1.523 G-s

BLR-0200A - BLR-0200A LFG BLOWER A (28-Apr-23)

	OVERALL LEVEL	1K-20KHz
MOH	.088 In/Sec	.835 G-s
MOV	.128 In/Sec	.388 G-s
MIH	.071 In/Sec	1.381 G-s
MIV	.256 In/Sec	.348 G-s
MIA	.146 In/Sec	.527 G-s
BIA	.262 In/Sec	4.471 G-s
BIH	.682 In/Sec	19.32 G-s
BIV	.568 In/Sec	4.722 G-s

BLR-0200B - BLR-0200B LFG BLOWER B (28-Apr-23)

	OVERALL LEVEL	1K-20KHz
MOH	.088 In/Sec	.840 G-s
MOV	.108 In/Sec	.370 G-s
MIH	.113 In/Sec	.994 G-s
MIV	.173 In/Sec	.389 G-s
MIA	.186 In/Sec	.353 G-s
BIA	.296 In/Sec	3.249 G-s
BIH	.370 In/Sec	8.254 G-s
BIV	.506 In/Sec	3.573 G-s
BOH	.395 In/Sec	10.78 G-s
BOV	.456 In/Sec	3.480 G-s
BOA	.223 In/Sec	3.633 G-s

BLR-0200C - BLR-0200C LFG BLOWER C (28-Apr-23)

	OVERALL LEVEL	1K-20KHz
MOH	.098 In/Sec	1.151 G-s
MOV	.151 In/Sec	.416 G-s
MIH	.089 In/Sec	1.430 G-s
MIV	.182 In/Sec	.323 G-s
MIA	.203 In/Sec	.421 G-s
BIA	.424 In/Sec	3.689 G-s
BIH	.849 In/Sec	20.19 G-s
BIV	.669 In/Sec	4.052 G-s
BOH	.672 In/Sec	13.21 G-s
BOV	.311 In/Sec	1.859 G-s
BOA	.222 In/Sec	3.200 G-s

C-1300 - C-1300 SALES GAS COMP STG 1 (28-Apr-23)

	OVERALL LEVEL	1K-20KHz
MOH	.063 In/Sec	1.194 G-s
MOV	.141 In/Sec	.273 G-s
MIH	.067 In/Sec	1.817 G-s
MIV	.282 In/Sec	.326 G-s
MIA	.175 In/Sec	.370 G-s
CIA	.184 In/Sec	.771 G-s
CIH	.213 In/Sec	4.115 G-s
CIV	.213 In/Sec	.532 G-s
COH	.147 In/Sec	1.791 G-s
COV	.301 In/Sec	.947 G-s
COA	.183 In/Sec	.738 G-s
P1	.194 In/Sec	3.182 G-s

C-1304 - C-1304 SALES GAS COMP STG 2 (28-Apr-23)

	OVERALL LEVEL	1K-20KHz
MOH	.175 In/Sec	.842 G-s
MOV	.163 In/Sec	1.108 G-s
MIH	.168 In/Sec	.643 G-s
MIV	.087 In/Sec	.494 G-s
MIA	.101 In/Sec	.380 G-s
CIA	.121 In/Sec	.739 G-s
CIH	.162 In/Sec	1.831 G-s
CIV	.114 In/Sec	.425 G-s

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            COH                     .177 In/Sec       .577 G-s
            COV                     .216 In/Sec       .264 G-s
            COA                     .219 In/Sec       .255 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

HI-SPEED INDUSTRIAL SERVICE
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