HI-SPEED INDUSTRIAL SERVICE QualiTest® Diagnostics

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May 15, 2024

South Shelby RNG
Memphis, TN

The following is a summary of findings from the monthly vibration survey that was performed on May 10, 2024.

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
Compressor data still shows some high vibration (mainly 1 x input rpm) especially in the vertical direction. Check compressor fasteners and ensure couplings and alignment are good. Rated as a **CLASS II** defect.

C-0600 B Feed Gas Compressor
Compressor vertical data continues to show some dominant 1 x, 4 and 8 x male rotor rpm vibration; however, overall vibration is lower than average. An 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 and compressor have 1 x rpm vibration. Compressor data also shows high harmonic vibrations that are related to 1 x male rotor and 4 x rpm of the male rotor. Compressor may have internal fit looseness causing internal clearance issues. For now, we recommend performing a lift check of the input shaft and perform 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, Blower MOTORS
Motor data is showing an increase in non-synchronous vibration, noise floor, and 1-20 Khz. amplitude. There are all indications of bearing issues in the motors. This could be a lube issue, but is more likely to be caused by defective motor bearings. Motors need attention soon. Rated as a high **CLASS II** defect.

C-1300 Sales Gas Compressor Stage 1
Compressor drive end data still shows some high frequency vibration that may be related to gear mesh frequency of the internal mating gears. Amplitude is slightly lower this survey, but these peaks are still present. We need more internal information such as gear ratio and number of gear teeth to confirm issue. Rated as a **CLASS I** defect for now.

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                    Abbreviated Last Measurement Summary
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            Database:  South Shelby RNG.rbm
            Area:      SOUTH SHELBY PLANT

MEASUREMENT POINT              OVERALL LEVEL       HFD / VHFD
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C-551B     - C-551B VACUUM COMPRESSOR B    (10-May-24)
                                OVERALL LEVEL     1K-20KHz
       MOH                       .078 In/Sec      1.486 G-s
       MOV                       .090 In/Sec       .655 G-s
       MIH                       .088 In/Sec      1.675 G-s
       MIV                       .074 In/Sec       .395 G-s
       MIA                       .082 In/Sec       .300 G-s
       CIA                       .211 In/Sec      2.079 G-s
       CIH                       .200 In/Sec      4.683 G-s
       CIV                       .204 In/Sec       .563 G-s
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	COH	.243 In/Sec	7.487 G-s
	COV	.199 In/Sec	1.034 G-s
	COA	.152 In/Sec	1.527 G-s

C-551A - C-551A VACUUM COMPRESSOR A (10-May-24)

	OVERALL LEVEL	1K-20KHz
MOH	.071 In/Sec	2.244 G-s
MOV	.073 In/Sec	.175 G-s
MIH	.111 In/Sec	1.066 G-s
MIV	.070 In/Sec	.247 G-s
MIA	.059 In/Sec	.312 G-s
CIA	.342 In/Sec	3.083 G-s
CIH	.388 In/Sec	6.984 G-s
CIV	.293 In/Sec	1.290 G-s
COH	.240 In/Sec	5.183 G-s
COV	.154 In/Sec	1.376 G-s
COA	.152 In/Sec	1.484 G-s

C-601B - C-601B N2 RECYCLE COMP B (10-May-24)

	OVERALL LEVEL	1K-20KHz
MOH	.105 In/Sec	.364 G-s
MOV	.029 In/Sec	.148 G-s
MIH	.097 In/Sec	.732 G-s
MIV	.026 In/Sec	.218 G-s
MIA	.044 In/Sec	.163 G-s
CIA	.116 In/Sec	.529 G-s
CIH	.125 In/Sec	1.474 G-s
CIV	.124 In/Sec	.350 G-s
COH	.236 In/Sec	2.214 G-s
COV	.176 In/Sec	.724 G-s
COA	.290 In/Sec	.580 G-s

C-601A - C-601A N2 RECYCLE COMP A (10-May-24)

	OVERALL LEVEL	1K-20KHz
MOH	.039 In/Sec	.911 G-s
MOV	.026 In/Sec	.537 G-s
MIH	.069 In/Sec	.707 G-s
MIV	.027 In/Sec	.237 G-s
MIA	.038 In/Sec	.212 G-s
CIA	.117 In/Sec	.695 G-s
CIH	.119 In/Sec	2.182 G-s
CIV	.173 In/Sec	.318 G-s
COH	.130 In/Sec	1.674 G-s
COV	.116 In/Sec	.628 G-s
COA	.112 In/Sec	.585 G-s

C-0600A - C-0600A FEED GAS COMP A (10-May-24)

	OVERALL LEVEL	1K-20KHz
MOH	.089 In/Sec	.444 G-s
MOV	.061 In/Sec	.156 G-s
MIH	.101 In/Sec	.650 G-s
MIV	.049 In/Sec	.253 G-s
MIA	.057 In/Sec	.161 G-s
CIA	.343 In/Sec	.259 G-s
CIH	.294 In/Sec	1.012 G-s
CIV	.777 In/Sec	.275 G-s
COH	.199 In/Sec	1.349 G-s
COV	.637 In/Sec	.462 G-s
COA	.442 In/Sec	.551 G-s

C-0600B - C-0600B FEED GAS COMP B (10-May-24)

	OVERALL LEVEL	1K-20KHz
MOH	.106 In/Sec	.472 G-s
MOV	.048 In/Sec	.087 G-s
MIH	.157 In/Sec	.773 G-s
MIV	.068 In/Sec	.332 G-s
MIA	.089 In/Sec	.269 G-s
CIA	.224 In/Sec	.535 G-s
CIH	.367 In/Sec	3.327 G-s
CIV	.491 In/Sec	.976 G-s

	COH	.313 In/Sec	2.091 G-s
	COV	.555 In/Sec	.408 G-s
	COA	.258 In/Sec	.713 G-s

C-0600C - C-0600C FEED GAS COMP C (10-May-24)

	OVERALL LEVEL	1K-20KHz
MOH	.363 In/Sec	.284 G-s
MOV	.300 In/Sec	.086 G-s
MIH	.365 In/Sec	.451 G-s
MIV	.108 In/Sec	.258 G-s
MIA	.171 In/Sec	.284 G-s
CIA	.598 In/Sec	1.762 G-s
CIH	.594 In/Sec	8.247 G-s
CIV	.765 In/Sec	.698 G-s
COH	.354 In/Sec	2.511 G-s
COV	.807 In/Sec	.605 G-s
COA	.506 In/Sec	.709 G-s

BLR-0200A - BLR-0200A LFG BLOWER A (10-May-24)

	OVERALL LEVEL	1K-20KHz
MOH	.095 In/Sec	2.086 G-s
MOV	.071 In/Sec	.602 G-s
MIH	.131 In/Sec	3.038 G-s
MIV	.202 In/Sec	.493 G-s
MIA	.058 In/Sec	.741 G-s
BIA	.177 In/Sec	3.503 G-s
BIV	.301 In/Sec	3.341 G-s
BOV	.289 In/Sec	3.699 G-s
BOA	.186 In/Sec	3.390 G-s

BLR-0200B - BLR-0200B LFG BLOWER B (10-May-24)

	OVERALL LEVEL	1K-20KHz
MOH	.084 In/Sec	2.202 G-s
MOV	.065 In/Sec	.431 G-s
MIH	.127 In/Sec	3.534 G-s
MIV	.124 In/Sec	.550 G-s
MIA	.056 In/Sec	.793 G-s
BIA	.173 In/Sec	2.410 G-s
BIH	.372 In/Sec	8.830 G-s
BIV	.261 In/Sec	3.058 G-s
BOH	.378 In/Sec	13.39 G-s
BOV	.318 In/Sec	2.388 G-s
BOA	.173 In/Sec	2.601 G-s

BLR-0200C - BLR-0200C LFG BLOWER C (10-May-24)

	OVERALL LEVEL	1K-20KHz
MOH	.088 In/Sec	.938 G-s
MOV	.084 In/Sec	.186 G-s
MIH	.094 In/Sec	1.078 G-s
MIV	.140 In/Sec	.218 G-s
MIA	.062 In/Sec	.259 G-s
BIA	.213 In/Sec	3.336 G-s
BIH	.627 In/Sec	16.56 G-s
BIV	.301 In/Sec	3.576 G-s
BOH	.537 In/Sec	13.53 G-s
BOV	.327 In/Sec	2.437 G-s
BOA	.189 In/Sec	2.314 G-s

BLR-0200D - BLR-0200D LFG BLOWER D (10-May-24)

	OVERALL LEVEL	1K-20KHz
MOH	.105 In/Sec	.985 G-s
MOV	.087 In/Sec	.257 G-s
MIH	.081 In/Sec	1.452 G-s
MIV	.152 In/Sec	.255 G-s
MIA	.051 In/Sec	.451 G-s
BIA	.209 In/Sec	2.673 G-s
BIH	.485 In/Sec	16.07 G-s
BIV	.328 In/Sec	2.994 G-s
BOH	.440 In/Sec	15.49 G-s
BOV	.373 In/Sec	2.659 G-s

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            BOA                      .206 In/Sec      2.907 G-s

      C-1300      - C-1300 SALES GAS COMP STG 1   (10-May-24)
                                     OVERALL LEVEL     1K-20KHz
            MOH                       .099 In/Sec       .470 G-s
            MOV                       .061 In/Sec       .101 G-s
            MIH                       .050 In/Sec       .333 G-s
            MIV                       .142 In/Sec       .079 G-s
            MIA                       .134 In/Sec       .135 G-s
            CIA                       .295 In/Sec       .645 G-s
            CIH                       .281 In/Sec      4.239 G-s
            CIV                       .340 In/Sec       .855 G-s
            COH                       .204 In/Sec      2.035 G-s
            COV                       .197 In/Sec       .776 G-s
            COA                       .306 In/Sec      1.103 G-s

      C-1304      - C-1304 SALES GAS COMP STG 2   (10-May-24)
                                     OVERALL LEVEL     1K-20KHz
            MOH                       .208 In/Sec       .670 G-s
            MOV                       .132 In/Sec       .602 G-s
            MIH                       .166 In/Sec       .821 G-s
            MIV                       .091 In/Sec       .558 G-s
            MIA                       .109 In/Sec       .285 G-s
            CIA                       .167 In/Sec       .180 G-s
            CIH                       .174 In/Sec       .571 G-s
            CIV                       .131 In/Sec       .437 G-s
            COH                       .141 In/Sec       .322 G-s
            COV                       .121 In/Sec       .243 G-s
            COA                       .105 In/Sec       .196 G-s
            2SH                       .198 In/Sec       .435 G-s
            2SV                       .226 In/Sec       .123 G-s
            2SA                       .270 In/Sec       .136 G-s
            3SH                       .269 In/Sec       .720 G-s
            3SV                       .150 In/Sec       .242 G-s
            3SA                       .196 In/Sec       .313 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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QualiTest® Diagnostics

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