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

December 6, 2022

South Shelby RNG
Memphis, TN

The following is a summary of findings from the monthly vibration survey that was performed on December 5, 2022.

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.

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,

Kevin W. Maxwell

ISO Certified Vibration Analyst, Category III

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

Defects

C-0600 A Feed Gas Compressor

Higher than average 1 x rpm vibration is still present in the compressor section. Vibration has increased from .96 to 1.07 ips at the drive end of the compressor. This may be due to soft foot, coupling issue, or some other issue such as piping strain. Outlet compressor piping has a significant amount of high vibration this survey with amplitude of over 2.0 ips. This is considered very high amplitude. Inspect coupling and ensure compressor piping does not have strain.. 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.

BLR-0200 D LFG Blower

Unit was down but the following still applies: Motor data shows signs of bearing defects in the DE motor bearing. Amplitudes have increased to alarm levels. Motor should be replaced soon. Rated as a **CLASS III** defect.

```
                  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    (05-Dec-22)
                               OVERALL LEVEL     1K-20KHz
       MOH                      .085 In/Sec      1.614 G-s
       MOV                      .075 In/Sec       .832 G-s
       MIH                      .110 In/Sec      2.095 G-s
       MIV                      .113 In/Sec       .906 G-s
       MIA                      .105 In/Sec       .633 G-s
       CIA                      .137 In/Sec      2.034 G-s
       CIH                      .180 In/Sec      3.148 G-s
       CIV                      .213 In/Sec      1.522 G-s
       COH                      .190 In/Sec      5.022 G-s
       COV                      .251 In/Sec      2.515 G-s
       COA                      .226 In/Sec      3.155 G-s
```

C-551A - C-551A VACUUM COMPRESSOR A (05-Dec-22)

	OVERALL LEVEL	1K-20KHz
MOH	.071 In/Sec	1.067 G-s
MOV	.078 In/Sec	1.080 G-s
MIH	.114 In/Sec	.748 G-s
MIV	.081 In/Sec	1.094 G-s
MIA	.097 In/Sec	.829 G-s
CIA	.204 In/Sec	3.657 G-s
CIH	.325 In/Sec	6.118 G-s
CIV	.284 In/Sec	2.083 G-s
COH	.239 In/Sec	4.563 G-s
COV	.282 In/Sec	3.267 G-s
COA	.140 In/Sec	2.112 G-s

C-601B - C-601B N2 RECYCLE COMP B (05-Dec-22)

	OVERALL LEVEL	1K-20KHz
MOH	.098 In/Sec	.672 G-s
MOV	.030 In/Sec	.119 G-s
MIH	.128 In/Sec	.424 G-s
MIV	.049 In/Sec	.208 G-s
MIA	.049 In/Sec	.208 G-s
CIA	.098 In/Sec	1.012 G-s
CIH	.121 In/Sec	2.821 G-s
CIV	.071 In/Sec	2.842 G-s
COH	.182 In/Sec	3.530 G-s
COV	.158 In/Sec	1.195 G-s
COA	.134 In/Sec	1.285 G-s

C-601A - C-601A N2 RECYCLE COMP A (05-Dec-22)

	OVERALL LEVEL	1K-20KHz
MOH	.050 In/Sec	.921 G-s
MOV	.022 In/Sec	.239 G-s
MIH	.100 In/Sec	1.425 G-s
MIV	.029 In/Sec	.514 G-s
MIA	.026 In/Sec	.435 G-s
CIA	.152 In/Sec	1.322 G-s
CIH	.104 In/Sec	2.063 G-s
CIV	.142 In/Sec	1.187 G-s
COH	.122 In/Sec	3.540 G-s
COV	.143 In/Sec	1.260 G-s
COA	.144 In/Sec	1.152 G-s

C-0600A - C-0600A FEED GAS COMP A (05-Dec-22)

	OVERALL LEVEL	1K-20KHz
MOH	.071 In/Sec	.730 G-s
MOV	.092 In/Sec	.328 G-s
MIH	.112 In/Sec	.678 G-s
MIV	.120 In/Sec	.359 G-s
MIA	.050 In/Sec	.265 G-s
CIA	.316 In/Sec	.994 G-s
CIH	.426 In/Sec	7.004 G-s
CIV	.394 In/Sec	.921 G-s
COH	.348 In/Sec	3.718 G-s
COV	.611 In/Sec	.699 G-s
COA	.384 In/Sec	1.316 G-s

C-0600B - C-0600B FEED GAS COMP B (05-Dec-22)

	OVERALL LEVEL	1K-20KHz
MOH	.201 In/Sec	.552 G-s
MOV	.218 In/Sec	.437 G-s
MIH	.266 In/Sec	.778 G-s
MIV	.248 In/Sec	.524 G-s
MIA	.106 In/Sec	.464 G-s
CIA	.399 In/Sec	.441 G-s
CIH	.422 In/Sec	3.456 G-s
CIV	.636 In/Sec	.627 G-s
COH	.436 In/Sec	2.264 G-s
COV	.676 In/Sec	.660 G-s
COA	.343 In/Sec	.665 G-s

C-0600C - C-0600C FEED GAS COMP C (05-Dec-22)

	OVERALL LEVEL	1K-20KHz
MOH	.657 In/Sec	.313 G-s
MOV	.409 In/Sec	.153 G-s
MIH	.443 In/Sec	.720 G-s
MIV	.147 In/Sec	.503 G-s
MIA	.101 In/Sec	.585 G-s
CIA	.241 In/Sec	1.033 G-s
CIH	.379 In/Sec	2.801 G-s
CIV	.668 In/Sec	.765 G-s
COH	.421 In/Sec	2.789 G-s
COV	.792 In/Sec	1.032 G-s
COA	.458 In/Sec	.958 G-s

BLR-0200A - BLR-0200A LFG BLOWER A (05-Dec-22)

	OVERALL LEVEL	1K-20KHz
MOH	.112 In/Sec	.989 G-s
MOV	.139 In/Sec	.389 G-s
MIH	.085 In/Sec	1.144 G-s
MIV	.233 In/Sec	.277 G-s
MIA	.128 In/Sec	.494 G-s
BIA	.235 In/Sec	6.036 G-s
BIH	.391 In/Sec	16.35 G-s
BIV	.401 In/Sec	4.493 G-s
BOH	.497 In/Sec	15.54 G-s
BOV	.476 In/Sec	5.559 G-s
BOA	.369 In/Sec	5.253 G-s

BLR-0200B - BLR-0200B LFG BLOWER B (05-Dec-22)

	OVERALL LEVEL	1K-20KHz
MOH	.091 In/Sec	.810 G-s
MOV	.121 In/Sec	.460 G-s
MIH	.116 In/Sec	1.073 G-s
MIV	.128 In/Sec	.329 G-s
MIA	.064 In/Sec	.412 G-s
BIA	.283 In/Sec	3.995 G-s
BIH	.374 In/Sec	9.810 G-s
BIV	.401 In/Sec	4.098 G-s
BOH	.374 In/Sec	10.26 G-s
BOV	.387 In/Sec	4.329 G-s
BOA	.168 In/Sec	3.712 G-s

C-1300 - C-1300 SALES GAS COMP STG 1 (05-Dec-22)

	OVERALL LEVEL	1K-20KHz
MOH	.072 In/Sec	.531 G-s
MOV	.172 In/Sec	.245 G-s
MIH	.055 In/Sec	.798 G-s
MIV	.249 In/Sec	.249 G-s
MIA	.162 In/Sec	.156 G-s
CIA	.325 In/Sec	.601 G-s
CIH	.221 In/Sec	2.820 G-s
CIV	.265 In/Sec	.892 G-s
COH	.219 In/Sec	2.672 G-s
COV	.304 In/Sec	.974 G-s
COA	.295 In/Sec	1.030 G-s

C-1304 - C-1304 SALES GAS COMP STG 2 (05-Dec-22)

	OVERALL LEVEL	1K-20KHz
MOH	.094 In/Sec	.947 G-s
MOV	.146 In/Sec	1.377 G-s
MIH	.104 In/Sec	1.047 G-s
MIV	.096 In/Sec	.948 G-s
MIA	.092 In/Sec	.426 G-s
CIA	.109 In/Sec	.286 G-s
CIH	.140 In/Sec	.612 G-s
CIV	.108 In/Sec	.429 G-s
COH	.178 In/Sec	.275 G-s
COV	.147 In/Sec	.157 G-s
COA	.236 In/Sec	.294 G-s

Clarification Of Vibration Units:

Acc	**-->**	**G-s**	**RMS**
Vel	**-->**	**In/Sec**	**PK**