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December 2, 2024

North Shelby Plant Millington, TN

The following is a summary of findings from the November 2024 monthly vibration survey at the North Shelby site.

**QualiTest**® uses a four-step rating system for defects.

<u>Class I:</u> Defect is present, but effect on reliability is not clear; no immediate action is required. Continue to normally monitor.

<u>Class II:</u> Defect (s) present that may cause problem in long term (2-6 months). Repair during normal maintenance scheduling. Continue to monitor.

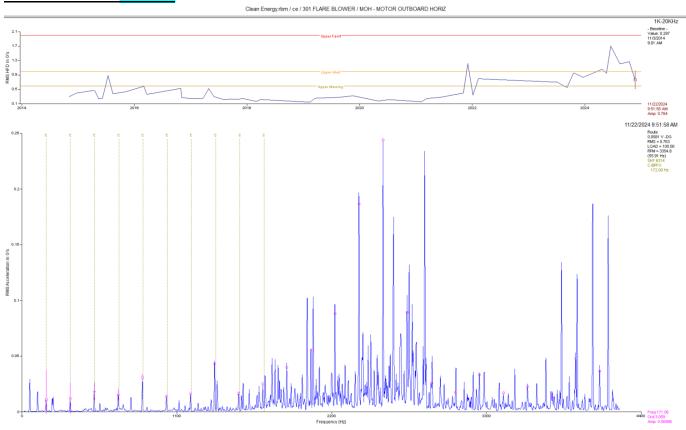
<u>Class III</u>; Defect (s) present that may cause failure in short term (less than 2 months). This should be addressed as soon as practical, with a high maintenance priority. Increase monitoring frequency.

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.

# **Defects**

# 301 Flare Blower CLASS II



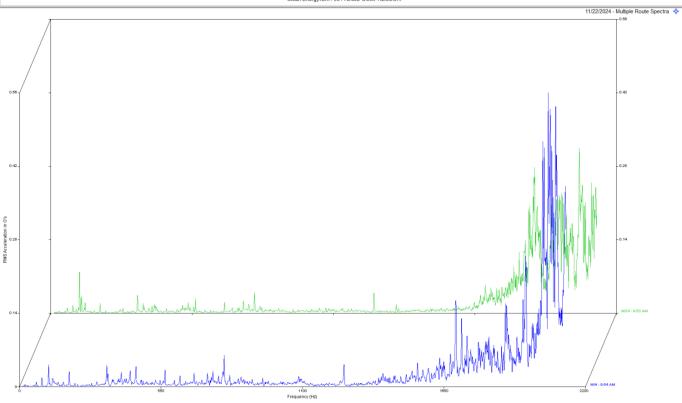
### **Observations:**

Data above is the motor outboard horizontal. There appear to be several harmonics of a non-synchronous frequency present in the spectra that line up with outer race defect fundamental and its harmonics. This is indication of bearing defects in the motor.

### **Recommendations:**

Motor should be replaced in the next few months. We are monitoring this closely.

Clean Energy.rbm / ce / RINSE COMPRESSOR



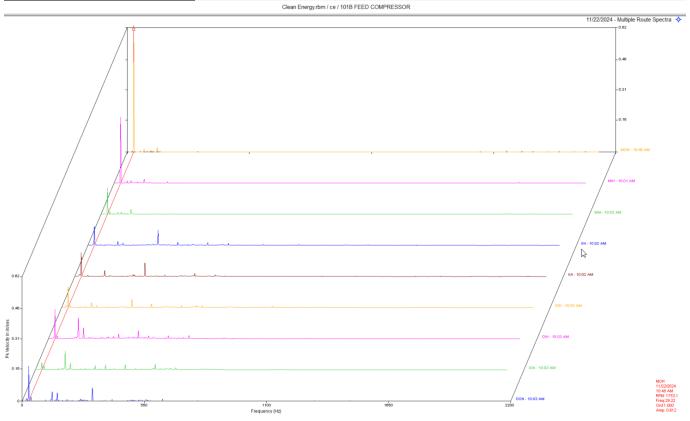
### **Observations:**

Drive motor data shows some high frequency vibration. Motor is also making a squealing type noise. The last reading showed amplitude to be 2.1 g's on average. Spectral data shows a noise floor 1500-5000 hz range. Peak to peak waveform amplitude is 16 to 18 g's.

### **Recommendations:**

Vibration characteristics indicate a lube issue or bearing wear. Motor likely needs attention during next extended shutdown. We are monitoring this closely. Rated as a **CLASS II** defect for now.

# Feed Compressor B CLASS I

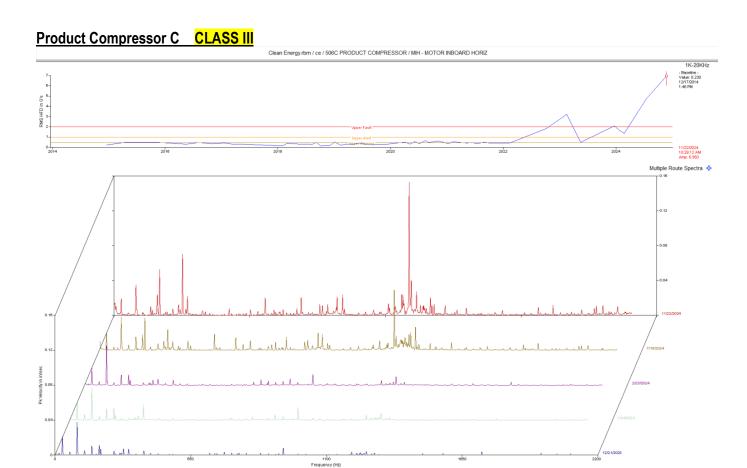


# **Observations:**

New motor compressor data shows motor to have elevated 1 x rpm vibration.

### **Recommendations:**

The 1 x rpm vibration may be due to process load and or motor rpm. There could also be an issue with the motor side of the coupling. It is recommended to recheck alignment, fasteners, and check couplings, at next opportunity.



# **Observations:**

Trend data shows increase in G's in motor data. Spectral waterfall of motor DE shows an increase in non-synchronous peaks over the past few surveys.

# **Recommendations:**

Data indicates defects in motor bearings. Motor will need attention in the next couple of months.

# Abbreviated Last Measurement Summary

Database: Clean Energy.rbm Area: millington plant

	-	
MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD
301 FLARE - 301 FLARE BLOWE	R (2)	2-Nov-24)
	OVERALL LEVEL	
мон	.058 In/Sec	
MOV	199 In/Sec	
MIH	.199 In/Sec .077 In/Sec	1 075 C-s
MIV		
MIA	.122 In/Sec .049 In/Sec .152 In/Sec	.502 G-s
<del></del>	.049 III/Sec	.302 G-S
EIH	.152 In/Sec	.322 G-s
EIV		
EIA	.041 In/Sec	.143 G-s
EOH	.104 In/Sec	.409 G-s
EOV	.139 In/Sec	.376 G-s
RINSE COMP - RINSE COMPRESSO	•	2-Nov-24)
	OVERALL LEVEL	1K-20KHz
MOH	.115 In/Sec	2.026 G-s
M1P	.018 In/Sec .123 In/Sec	
MIH		4.009 G-s
M2P	.022 In/Sec	
MIA	.085 In/Sec	.442 G-s
IIH	.084 In/Sec	1.391 G-s
IIA	.166 In/Sec	.199 G-s
IOH		
OIH	.089 In/Sec	1.083 G-s
OIA	.101 In/Sec .089 In/Sec .114 In/Sec	.177 G-s
ООН	.107 In/Sec	
<b>5511</b>	. 10 / 111, 500	.552 0 0
VAC COMP - VACUUM COMPRESS	OR (2)	2-Nov-24)
VAC COMP - VACUUM COMPRESSO		2-Nov-24) 1K-20KHz
	OVERALL LEVEL	1K-20KHz
мон	OVERALL LEVEL	1K-20KHz
MOH MIH	OVERALL LEVEL	1K-20KHz
MOH MIH MIA	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s
MOH MIH MIA IIH	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s
MOH MIH MIA IIH IIA	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s
MOH MIH MIA IIH IIA IOH	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec .050 In/Sec .131 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s .123 G-s .860 G-s
MOH MIH MIA IIH IIA IOH OIH	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec .050 In/Sec .131 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s .123 G-s .860 G-s .910 G-s
MOH MIH MIA IIH IIA IOH OIH	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec .050 In/Sec .131 In/Sec .096 In/Sec .062 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s .123 G-s .860 G-s .910 G-s
MOH MIH MIA IIH IIA IOH OIH	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec .050 In/Sec .131 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s .123 G-s .860 G-s
MOH MIH MIA IIH IIA IOH OIH OIA	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec .050 In/Sec .131 In/Sec .096 In/Sec .062 In/Sec .100 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s .123 G-s .860 G-s .910 G-s .217 G-s .780 G-s
MOH MIH MIA IIH IIA IOH OIH	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec .050 In/Sec .131 In/Sec .096 In/Sec .062 In/Sec .100 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s .123 G-s .860 G-s .910 G-s .217 G-s .780 G-s
MOH MIH MIA IIH IIA IOH OIH OIA OOH	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec .050 In/Sec .131 In/Sec .096 In/Sec .062 In/Sec .100 In/Sec .100 In/Sec .100 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s .123 G-s .860 G-s .910 G-s .217 G-s .780 G-s
MOH MIH MIA IIH IIA IOH OIH OIA OOH  101B COMP - 101B FEED COMPRI	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec .050 In/Sec .131 In/Sec .096 In/Sec .062 In/Sec .100 In/Sec ESSOR OVERALL LEVEL .625 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s .123 G-s .860 G-s .910 G-s .217 G-s .780 G-s 2-Nov-24) 1K-20KHz .402 G-s
MOH MIH MIA IIH IIA IOH OIH OIA OOH  101B COMP - 101B FEED COMPRI	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec .050 In/Sec .131 In/Sec .096 In/Sec .062 In/Sec .100 In/Sec ESSOR OVERALL LEVEL .625 In/Sec .339 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s .123 G-s .860 G-s .910 G-s .217 G-s .780 G-s 2-Nov-24) 1K-20KHz .402 G-s .244 G-s
MOH MIH MIA IIH IIA IOH OIH OIA OOH  101B COMP - 101B FEED COMPRI	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec .050 In/Sec .131 In/Sec .096 In/Sec .062 In/Sec .100 In/Sec ESSOR OVERALL LEVEL .625 In/Sec .339 In/Sec .139 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s .123 G-s .860 G-s .910 G-s .217 G-s .780 G-s 2-Nov-24) 1K-20KHz .402 G-s .244 G-s .246 G-s
MOH MIH MIA IIH IIA IOH OIH OIA OOH  101B COMP - 101B FEED COMPRI  MOH MIH MIA IIH	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec .050 In/Sec .131 In/Sec .096 In/Sec .062 In/Sec .100 In/Sec ESSOR OVERALL LEVEL .625 In/Sec .339 In/Sec .139 In/Sec .137 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s .123 G-s .860 G-s .910 G-s .217 G-s .780 G-s 2-Nov-24) 1K-20KHz .402 G-s .244 G-s .246 G-s 1.340 G-s
MOH MIH MIA IIH IIA IOH OIH OIA OOH  101B COMP - 101B FEED COMPRI  MOH MIH MIA IIH IIA	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec .050 In/Sec .131 In/Sec .096 In/Sec .062 In/Sec .100 In/Sec ESSOR OVERALL LEVEL .625 In/Sec .339 In/Sec .139 In/Sec .137 In/Sec .156 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s .123 G-s .860 G-s .910 G-s .217 G-s .780 G-s  2-Nov-24) 1K-20KHz .402 G-s .244 G-s .246 G-s 1.340 G-s .778 G-s
MOH MIH MIA IIH IIA IOH OIA OOH  101B COMP - 101B FEED COMPRI  MOH MIH MIA IIH IIA IOH	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec .050 In/Sec .131 In/Sec .096 In/Sec .062 In/Sec .100 In/Sec ESSOR OVERALL LEVEL .625 In/Sec .339 In/Sec .139 In/Sec .137 In/Sec .156 In/Sec .133 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s .123 G-s .860 G-s .910 G-s .217 G-s .780 G-s  2-Nov-24) 1K-20KHz .402 G-s .244 G-s .246 G-s 1.340 G-s .778 G-s .748 G-s
MOH MIH MIA IIH IIA IOH OIH OIA OOH  101B COMP - 101B FEED COMPRI  MOH MIH MIA IIH IIA	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec .050 In/Sec .131 In/Sec .096 In/Sec .062 In/Sec .100 In/Sec ESSOR OVERALL LEVEL .625 In/Sec .139 In/Sec .137 In/Sec .156 In/Sec .133 In/Sec .133 In/Sec .215 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s .123 G-s .860 G-s .910 G-s .217 G-s .780 G-s  2-Nov-24) 1K-20KHz .402 G-s .244 G-s .246 G-s 1.340 G-s .778 G-s
MOH MIH MIA IIH IIA IOH OIA OOH  101B COMP - 101B FEED COMPRI  MOH MIH MIA IIH IIA IOH	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec .050 In/Sec .131 In/Sec .096 In/Sec .062 In/Sec .100 In/Sec ESSOR OVERALL LEVEL .625 In/Sec .339 In/Sec .139 In/Sec .137 In/Sec .156 In/Sec .133 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s .123 G-s .860 G-s .910 G-s .217 G-s .780 G-s  2-Nov-24) 1K-20KHz .402 G-s .244 G-s .246 G-s 1.340 G-s .778 G-s .748 G-s
MOH MIH MIA IIH IIA IOH OIA OOH  101B COMP - 101B FEED COMPRI  MOH MIH MIA IIH IIA IOH OIH OIH	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec .050 In/Sec .131 In/Sec .096 In/Sec .062 In/Sec .100 In/Sec ESSOR OVERALL LEVEL .625 In/Sec .139 In/Sec .137 In/Sec .156 In/Sec .133 In/Sec .133 In/Sec .215 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s .123 G-s .860 G-s .910 G-s .217 G-s .780 G-s  2-Nov-24) 1K-20KHz .402 G-s .244 G-s .246 G-s 1.340 G-s .778 G-s .748 G-s .876 G-s
MOH MIH MIA IIH IIA IOH OIA OOH  101B COMP - 101B FEED COMPRI  MOH MIH MIA IIH IIA IOH OIH OIH OIA	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec .050 In/Sec .131 In/Sec .096 In/Sec .062 In/Sec .100 In/Sec .100 In/Sec ESSOR OVERALL LEVEL .625 In/Sec .139 In/Sec .139 In/Sec .137 In/Sec .156 In/Sec .133 In/Sec .215 In/Sec .144 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s .123 G-s .860 G-s .910 G-s .217 G-s .780 G-s  2-Nov-24) 1K-20KHz .402 G-s .244 G-s .246 G-s 1.340 G-s .778 G-s .748 G-s .876 G-s
MOH MIH MIA IIH IIA IOH OIA OOH  101B COMP - 101B FEED COMPRI  MOH MIH MIA IIH IIA IOH OIH OIH OIA	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec .050 In/Sec .131 In/Sec .096 In/Sec .062 In/Sec .100 In/Sec .100 In/Sec ESSOR OVERALL LEVEL .625 In/Sec .139 In/Sec .139 In/Sec .137 In/Sec .156 In/Sec .133 In/Sec .215 In/Sec .144 In/Sec .209 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s .123 G-s .860 G-s .910 G-s .217 G-s .780 G-s  2-Nov-24) 1K-20KHz .402 G-s .244 G-s .246 G-s 1.340 G-s .778 G-s .748 G-s .876 G-s
MOH MIH MIA IIH IIA IOH OIH OIA OOH  101B COMP - 101B FEED COMPRI  MOH MIH MIA IIH IIA IOH OIH OIA OOH OOH	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec .050 In/Sec .131 In/Sec .096 In/Sec .062 In/Sec .100 In/Sec .100 In/Sec ESSOR OVERALL LEVEL .625 In/Sec .139 In/Sec .139 In/Sec .137 In/Sec .156 In/Sec .133 In/Sec .215 In/Sec .144 In/Sec .209 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s .123 G-s .860 G-s .910 G-s .217 G-s .780 G-s  2-Nov-24) 1K-20KHz .402 G-s .244 G-s .246 G-s 1.340 G-s .778 G-s .748 G-s .876 G-s .789 G-s 1.648 G-s
MOH MIH MIA IIH IIA IOH OIH OIA OOH  101B COMP - 101B FEED COMPRI  MOH MIH MIA IIH IIA IOH OIH OIA OOH OOH	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec .050 In/Sec .131 In/Sec .096 In/Sec .062 In/Sec .100 In/Sec .100 In/Sec .100 In/Sec .139 In/Sec .139 In/Sec .137 In/Sec .136 In/Sec .136 In/Sec .156 In/Sec .131 In/Sec .144 In/Sec .209 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s .123 G-s .860 G-s .910 G-s .217 G-s .780 G-s  2-Nov-24) 1K-20KHz .402 G-s .244 G-s .246 G-s 1.340 G-s .778 G-s .748 G-s .876 G-s .789 G-s 1.648 G-s
MOH MIH MIA IIH IIA IOH OIH OIA OOH  101B COMP - 101B FEED COMPRI  MOH MIH MIA IIH IIA IOH OIH OIA OOH  HX132B FAN - HX132B GAS OIL	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec .1050 In/Sec .131 In/Sec .096 In/Sec .100 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s .123 G-s .860 G-s .910 G-s .217 G-s .780 G-s  2-Nov-24) 1K-20KHz .402 G-s .244 G-s .246 G-s 1.340 G-s .778 G-s .748 G-s .748 G-s .748 G-s .748 G-s .749 G-s .789 G-s 1.648 G-s
MOH MIH MIA IIH IIA IOH OIH OIA OOH  101B COMP - 101B FEED COMPRI  MOH MIH MIA IIH IIA IOH OIH OIA OOH  HX132B FAN - HX132B GAS OIL O	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec .050 In/Sec .131 In/Sec .096 In/Sec .062 In/Sec .100 In/Sec .100 In/Sec ESSOR OVERALL LEVEL .625 In/Sec .139 In/Sec .139 In/Sec .137 In/Sec .156 In/Sec .133 In/Sec .144 In/Sec .209 In/Sec COOLER FAN OVERALL LEVEL .057 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s .123 G-s .860 G-s .910 G-s .217 G-s .780 G-s  2-Nov-24) 1K-20KHz .402 G-s .244 G-s .246 G-s 1.340 G-s .778 G-s .789 G-s .748 G-s .748 G-s .748 G-s .748 G-s .749 G-s .789 G-s 1.648 G-s
MOH MIH MIA IIH IIA IOH OIH OIA OOH  101B COMP - 101B FEED COMPRI  MOH MIH MIA IIH IIA IOH OIH OIA OOH  HX132B FAN - HX132B GAS OIL  MOH MIH	OVERALL LEVEL .138 In/Sec .065 In/Sec .057 In/Sec .103 In/Sec .050 In/Sec .131 In/Sec .096 In/Sec .062 In/Sec .100 In/Sec .100 In/Sec .100 In/Sec .100 In/Sec .139 In/Sec .139 In/Sec .137 In/Sec .136 In/Sec .137 In/Sec .156 In/Sec .144 In/Sec .209 In/Sec .209 In/Sec .209 In/Sec .209 In/Sec .200LER FAN OVERALL LEVEL .057 In/Sec .104 In/Sec	1K-20KHz 1.756 G-s 1.361 G-s .155 G-s .595 G-s .123 G-s .860 G-s .910 G-s .217 G-s .780 G-s  2-Nov-24) 1K-20KHz .402 G-s .244 G-s .246 G-s 1.340 G-s .778 G-s .748 G-s .748 G-s .748 G-s .748 G-s .749 G-s .749 G-s .749 G-s .789 G-s 1.648 G-s 1.648 G-s .765 G-s .760 G-s .778 G-s .778 G-s .789 G-s .789 G-s 1.648 G-s

451A PUMP	_	451a	VACCIIM	римо			(22-Nov-24)
45IA FOME		451A	VACCOM	FOME	OVERA	LL LEVEL	
MOH					.078	In/Sec	.613 G-s
MOV					.078	In/Sec	.252 G-s
MIH						In/Sec	
MIV					.129	In/Sec	.606 G-s
MIA					.069	In/Sec	.278 G-s 3.875 G-s
EIH							
EIV					.205	In/Sec	.803 G-s
EIA					.107	In/Sec In/Sec	.763 G-s
EOH EOV							.572 G-s .156 G-s
EOV					.153	In/Sec	.156 G-S
HX453A FAN	_	HX453	BA VAC I	PUMP C	OIL CO	OL FAN	(22-Nov-24)
					OVERA	LL LEVEL	1K-20KHz
MOH					.201	In/Sec	.124 G-s
MIH					.107	In/Sec	.076 G-s
4545							
451B PUMP	-	451B	VACCUM				(22-Nov-24)
мон					OVERA	TZ/COC	1K-20KHz .417 G-s
MOV					070	In/Sec	.176 G-s
MIH					.091	In/Sec	.395 G-s
MIV					.100	In/Sec In/Sec	.152 G-s
MIA					.079	In/Sec	.095 G-s
EIH							.340 G-s
EIV					.241	In/Sec	.203 G-s
EIA					.209	In/Sec In/Sec	.179 G-s
EOH					.202	In/Sec	.799 G-s
EOV					.236	In/Sec	.158 G-s
HX453B FAN	_	HX453	BB VAC I	PUMP C			(22-Nov-24)
MOH					OVERA	In/Sec	1K-20KHz .232 G-s
МОН					. 101		
					122	Tn /Coc	065 C-c
MIH					.122	In/Sec	.065 G-s
MIH 451C PUMP	_	451C	VACCUM	PUMP			(22-Nov-24)
	-	451C	VACCUM	PUMP	OVERA	LL LEVEL	(22-Nov-24) 1K-20KHz
	-	451C	VACCUM	PUMP	OVERAL	LL LEVEL In/Sec	(22-Nov-24) 1K-20KHz .590 G-s
451C PUMP MOH MOV	-	451C	VACCUM	PUMP	OVERAL	LL LEVEL In/Sec	(22-Nov-24) 1K-20KHz .590 G-s .151 G-s
451C PUMP  MOH MOV MIH	-	451C	VACCUM	PUMP	OVERAL .149 .134 .196	LL LEVEL In/Sec In/Sec In/Sec	(22-Nov-24) 1K-20KHz .590 G-s .151 G-s .757 G-s
451C PUMP  MOH  MOV  MIH  MIV	_	451C	VACCUM	PUMP	OVERAL .149 .134 .196 .183	LL LEVEL In/Sec In/Sec In/Sec In/Sec	(22-Nov-24) 1K-20KHz .590 G-s .151 G-s .757 G-s .457 G-s
451C PUMP  MOH  MOV  MIH  MIV  MIA	-	<b>451</b> C	VACCUM	PUMP	OVERAL .149 .134 .196 .183 .096	LL LEVEL In/Sec In/Sec In/Sec In/Sec In/Sec	(22-Nov-24) 1K-20KHz .590 G-s .151 G-s .757 G-s .457 G-s .243 G-s
451C PUMP  MOH  MOV  MIH  MIV  MIA  EIH	-	451C	VACCUM	PUMP	OVERAL .149 .134 .196 .183 .096 .183	LL LEVEL In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec	(22-Nov-24) 1K-20KHz .590 G-s .151 G-s .757 G-s .457 G-s .243 G-s .760 G-s
451C PUMP  MOH  MOV  MIH  MIV  MIA  EIH  EIV	_	<b>451</b> C	VACCUM	PUMP	OVERAL .149 .134 .196 .183 .096 .183	LL LEVEL In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec	(22-Nov-24) 1K-20KHz .590 G-s .151 G-s .757 G-s .457 G-s .243 G-s .760 G-s
451C PUMP  MOH  MOV  MIH  MIV  MIA  EIH  EIV  EIA	-	<b>4</b> 51C	VACCUM	PUMP	OVERAL .149 .134 .196 .183 .096 .183 .121	LL LEVEL In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec	(22-Nov-24) 1K-20KHz .590 G-s .151 G-s .757 G-s .457 G-s .243 G-s .760 G-s .280 G-s .184 G-s
451C PUMP  MOH  MOV  MIH  MIV  MIA  EIH  EIV	-	451C	VACCUM	PUMP	OVERAL .149 .134 .196 .183 .096 .183 .121 .097	LL LEVEL In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec	(22-Nov-24)  1K-20KHz .590 G-s .151 G-s .757 G-s .457 G-s .243 G-s .760 G-s .280 G-s .184 G-s .336 G-s
451C PUMP  MOH MOV MIH MIV MIA EIH EIV EIA EOH	-	451C	VACCUM	PUMP	OVERAL .149 .134 .196 .183 .096 .183 .121 .097	LL LEVEL In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec	(22-Nov-24)  1K-20KHz .590 G-s .151 G-s .757 G-s .457 G-s .243 G-s .760 G-s .280 G-s .184 G-s .336 G-s
451C PUMP  MOH MOV MIH MIV MIA EIH EIV EIA EOH EOV				PUMP (	OVERAL .149 .134 .196 .183 .096 .183 .121 .097 .141 .141	LL LEVEL In/Sec	(22-Nov-24) 1K-20KHz .590 G-s .151 G-s .757 G-s .457 G-s .243 G-s .760 G-s .280 G-s .184 G-s .336 G-s .125 G-s
451C PUMP  MOH MOV MIH MIV MIA EIH EIV EIA EOH EOV  HX453C FAN				PUMP (	OVERAL .149 .134 .196 .183 .096 .183 .121 .097 .141 .141	LL LEVEL In/Sec	(22-Nov-24)  1K-20KHz .590 G-s .151 G-s .757 G-s .457 G-s .243 G-s .760 G-s .280 G-s .184 G-s .336 G-s .125 G-s
451C PUMP  MOH MOV MIH MIV MIA EIH EIV EIA EOH EOV  HX453C FAN MOH				PUMP (	OVERAL .149 .134 .196 .183 .096 .183 .121 .097 .141 .141 OIL COC OVERAL .163	LL LEVEL In/Sec	(22-Nov-24)  1K-20KHz  .590 G-s  .151 G-s  .757 G-s  .457 G-s  .243 G-s  .760 G-s  .280 G-s  .184 G-s  .336 G-s  .125 G-s  (22-Nov-24)  1K-20KHz  .241 G-s
451C PUMP  MOH MOV MIH MIV MIA EIH EIV EIA EOH EOV  HX453C FAN				PUMP (	OVERAL .149 .134 .196 .183 .096 .183 .121 .097 .141 .141 OIL COC OVERAL .163	LL LEVEL In/Sec	(22-Nov-24)  1K-20KHz .590 G-s .151 G-s .757 G-s .457 G-s .243 G-s .760 G-s .280 G-s .184 G-s .336 G-s .125 G-s
451C PUMP  MOH MOV MIH MIV MIA EIH EIV EIA EOH EOV  HX453C FAN MOH	-	нх453	3C VAC 1	PUMP (	OVERAL .149 .134 .196 .183 .096 .183 .121 .097 .141 .141 OIL COC OVERAL .163	LL LEVEL In/Sec	(22-Nov-24)  1K-20KHz  .590 G-s  .151 G-s  .757 G-s  .457 G-s  .243 G-s  .760 G-s  .280 G-s  .184 G-s  .336 G-s  .125 G-s  (22-Nov-24)  1K-20KHz  .241 G-s
451C PUMP  MOH MOV MIH MIV MIA EIH EIV EIA EOH EOV  HX453C FAN MOH MIH	-	нх453	3C VAC 1	PUMP (	OVERAL .149 .134 .196 .183 .096 .183 .121 .097 .141 .141 OIL COC OVERAL .163 .113	LL LEVEL In/Sec	(22-Nov-24)  1K-20KHz .590 G-s .151 G-s .757 G-s .457 G-s .243 G-s .760 G-s .280 G-s .184 G-s .336 G-s .125 G-s  (22-Nov-24) 1K-20KHz .241 G-s .262 G-s
451C PUMP  MOH MOV MIH MIV MIA EIH EIV EIA EOH EOV  HX453C FAN MOH MIH	-	нх453	3C VAC 1	PUMP (	OVERAL .149 .134 .196 .183 .096 .183 .121 .097 .141 .141 OUL COO OVERAL .163 .113	LL LEVEL In/Sec	(22-Nov-24)  1K-20KHz .590 G-s .151 G-s .757 G-s .457 G-s .243 G-s .760 G-s .280 G-s .184 G-s .336 G-s .125 G-s  (22-Nov-24) 1K-20KHz .241 G-s .262 G-s
451C PUMP  MOH MOV MIH MIV MIA EIH EIV EIA EOH EOV  HX453C FAN MOH MIH  451D PUMP	-	нх453	3C VAC 1	PUMP (	OVERAL .149 .134 .196 .183 .096 .183 .121 .097 .141 .141 OUL COO OVERAL .163 .113 OVERAL .058 .069	LL LEVEL In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec LL LEVEL In/Sec In/Sec In/Sec	(22-Nov-24)  1K-20KHz .590 G-s .151 G-s .757 G-s .457 G-s .243 G-s .760 G-s .280 G-s .184 G-s .336 G-s .125 G-s  (22-Nov-24) 1K-20KHz .241 G-s .262 G-s  (22-Nov-24) 1K-20KHz .857 G-s .485 G-s
451C PUMP  MOH MOV MIH MIV MIA EIH EIV EIA EOH EOV  HX453C FAN MOH MIH  451D PUMP  MOH MOV MIH	-	нх453	3C VAC 1	PUMP (	OVERAL .149 .134 .196 .183 .096 .183 .121 .097 .141 .141 OIL COO OVERAL .163 .113	LL LEVEL In/Sec LL LEVEL In/Sec In/Sec	(22-Nov-24)  1K-20KHz .590 G-s .151 G-s .757 G-s .457 G-s .243 G-s .760 G-s .280 G-s .184 G-s .336 G-s .125 G-s  (22-Nov-24) 1K-20KHz .241 G-s .262 G-s  (22-Nov-24) 1K-20KHz .857 G-s .485 G-s
451C PUMP  MOH MOV MIH MIV MIA EIH EIV EIA EOH EOV  HX453C FAN MOH MIH  451D PUMP  MOH MOV MIH MIV	-	нх453	3C VAC 1	PUMP (	OVERAL .149 .134 .196 .183 .096 .183 .121 .097 .141 .141 OIL COO OVERAL .163 .113	LL LEVEL In/Sec LL LEVEL In/Sec In/Sec	(22-Nov-24)  1K-20KHz .590 G-s .151 G-s .757 G-s .457 G-s .243 G-s .760 G-s .280 G-s .184 G-s .336 G-s .125 G-s  (22-Nov-24) 1K-20KHz .241 G-s .262 G-s  (22-Nov-24) 1K-20KHz .857 G-s .485 G-s
451C PUMP  MOH MOV MIH MIV MIA EIH EIV EIA EOH EOV  HX453C FAN MOH MIH MOV MIH MIV MIV MIA	-	нх453	3C VAC 1	PUMP (	OVERAL .149 .134 .196 .183 .096 .183 .121 .097 .141 .141  OUL COO OVERAL .163 .113  OVERAL .058 .069 .073 .079 .039	LL LEVEL In/Sec	(22-Nov-24)  1K-20KHz .590 G-s .151 G-s .757 G-s .457 G-s .243 G-s .760 G-s .280 G-s .184 G-s .336 G-s .125 G-s  (22-Nov-24) 1K-20KHz .241 G-s .262 G-s  (22-Nov-24) 1K-20KHz .857 G-s .485 G-s .941 G-s .170 G-s .273 G-s
451C PUMP  MOH MOV MIH MIV MIA EIH EIV EIA EOH EOV  HX453C FAN MOH MIH MIV MIA MIV MIA EIH	-	нх453	3C VAC 1	PUMP (	OVERAL .149 .134 .196 .183 .096 .183 .121 .097 .141 .141 OIL COO OVERAL .163 .113 OVERAL .058 .069 .073 .079 .039	LL LEVEL In/Sec	(22-Nov-24)  1K-20KHz .590 G-S .151 G-S .757 G-S .457 G-S .243 G-S .760 G-S .280 G-S .184 G-S .336 G-S .125 G-S  (22-Nov-24) 1K-20KHz .241 G-S .262 G-S  (22-Nov-24) 1K-20KHz .857 G-S .485 G-S .941 G-S .273 G-S
451C PUMP  MOH MOV MIH MIV MIA EIH EIV EIA EOH EOV  HX453C FAN MOH MIH MIV MIA HMIV MIA EIH EIV EIU EIL	-	нх453	3C VAC 1	PUMP (	OVERAL .149 .134 .196 .183 .096 .183 .121 .097 .141 .141 OIL COO OVERAL .163 .113 OVERAL .058 .069 .073 .079 .039	LL LEVEL In/Sec	(22-Nov-24)  1K-20KHz .590 G-S .151 G-S .757 G-S .457 G-S .243 G-S .760 G-S .280 G-S .184 G-S .336 G-S .125 G-S  (22-Nov-24) 1K-20KHz .241 G-S .262 G-S  (22-Nov-24) 1K-20KHz .857 G-S .485 G-S .941 G-S .273 G-S
451C PUMP  MOH MOV MIH MIV MIA EIH EIV EIA EOH EOV  HX453C FAN MOH MIH MIV MIA HMIV MIA EIH EIV EIL EIL EOU EIL EOU EIL EOU EIL EOU EIL	-	нх453	3C VAC 1	PUMP (	OVERAL .149 .134 .196 .183 .096 .183 .121 .097 .141 .141  OUL COO OVERAL .163 .113  OVERAL .058 .069 .073 .079 .039 .157 .133 .104	LL LEVEL In/Sec	(22-Nov-24)  1K-20KHz .590 G-s .151 G-s .757 G-s .457 G-s .243 G-s .760 G-s .280 G-s .184 G-s .336 G-s .125 G-s  (22-Nov-24) 1K-20KHz .241 G-s .262 G-s  (22-Nov-24) 1K-20KHz .857 G-s .485 G-s .941 G-s .170 G-s .273 G-s .472 G-s .071 G-s .097 G-s
451C PUMP  MOH MOV MIH MIV MIA EIH EIV EIA EOH EOV  HX453C FAN MOH MIH  451D PUMP  MOH MOV MIH MIV MIA EIH EIV EIA EOH EOV	-	нх453	3C VAC 1	PUMP (	OVERAL .149 .134 .196 .183 .096 .183 .121 .097 .141 .141  OUL COC OVERAL .163 .113  OVERAL .058 .069 .073 .079 .039 .157 .133 .104 .199	LL LEVEL In/Sec	(22-Nov-24)  1K-20KHz .590 G-s .151 G-s .757 G-s .457 G-s .243 G-s .760 G-s .280 G-s .184 G-s .336 G-s .125 G-s  (22-Nov-24) 1K-20KHz .241 G-s .262 G-s  (22-Nov-24) 1K-20KHz .857 G-s .485 G-s .941 G-s .170 G-s .273 G-s .472 G-s .071 G-s .097 G-s .633 G-s
451C PUMP  MOH MOV MIH MIV MIA EIH EIV EIA EOH EOV  HX453C FAN MOH MIH MIV MIA HMIV MIA EIH EIV EIL EIL EOU EIL EOU EIL EOU EIL EOU EIL	-	нх453	3C VAC 1	PUMP (	OVERAL .149 .134 .196 .183 .096 .183 .121 .097 .141 .141  OUL COC OVERAL .163 .113  OVERAL .058 .069 .073 .079 .039 .157 .133 .104 .199	LL LEVEL In/Sec	(22-Nov-24)  1K-20KHz .590 G-s .151 G-s .757 G-s .457 G-s .243 G-s .760 G-s .280 G-s .184 G-s .336 G-s .125 G-s  (22-Nov-24) 1K-20KHz .241 G-s .262 G-s  (22-Nov-24) 1K-20KHz .857 G-s .485 G-s .941 G-s .170 G-s .273 G-s .472 G-s .071 G-s .097 G-s
451C PUMP  MOH MOV MIH MIV EIH EIV EIA EOH EOV  HX453C FAN MOH MIH MIV MIA EIH EIV EIA EOH EOV  MIH EIV EIA EOH EOV		HX453	3C VAC 1	PUMP C	OVERAL .149 .134 .196 .183 .096 .183 .121 .097 .141 .141  OUL COO OVERAL .163 .113  OVERAL .058 .069 .073 .079 .039 .157 .133 .104 .199 .235	LL LEVEL In/Sec	(22-Nov-24)  1K-20KHz .590 G-s .151 G-s .757 G-s .457 G-s .243 G-s .760 G-s .280 G-s .184 G-s .336 G-s .125 G-s  (22-Nov-24) 1K-20KHz .241 G-s .262 G-s  (22-Nov-24) 1K-20KHz .857 G-s .485 G-s .941 G-s .170 G-s .273 G-s .472 G-s .071 G-s .097 G-s .633 G-s .186 G-s
451C PUMP  MOH MOV MIH MIV EIH EIV EIA EOH EOV  HX453C FAN MOH MIH MIV MIA EIH EIV EIA EOH EOV  MIH EIV EIA EOH EOV		HX453	3C VAC 1	PUMP C	OVERAL .149 .134 .196 .183 .096 .183 .121 .097 .141 .141  OUL COO OVERAL .163 .113  OVERAL .058 .069 .073 .079 .039 .157 .133 .104 .199 .235	LL LEVEL In/Sec	(22-Nov-24)  1K-20KHz .590 G-s .151 G-s .757 G-s .457 G-s .243 G-s .760 G-s .280 G-s .184 G-s .336 G-s .125 G-s  (22-Nov-24) 1K-20KHz .241 G-s .262 G-s  (22-Nov-24) 1K-20KHz .857 G-s .485 G-s .941 G-s .170 G-s .273 G-s .472 G-s .071 G-s .097 G-s .633 G-s .186 G-s

MOH		.243 In/Sec	.149 G-s	
MIH		.233 In/Sec	.160 G-s	
		•		
506C COMP	- 506C PRODUCT	COMPRESSOR	(22-Nov-24)	
		OVERALL LEVEL	1K-20KHz	
MOH		.159 In/Sec	1.836 G-s	
MIH		.233 In/Sec	6.950 G-s	
MIA		.103 In/Sec	2.034 G-s	
IIH		.220 In/Sec		
IIA		.160 In/Sec		
IOH		.216 In/Sec		
OIH		.217 In/Sec		
OIA			1.701 G S	
ООН		.225 In/Sec	1.514 G-s	
HX507C FAN	- HX507C GAS CO	OOL FAN	(22-Nov-24)	
		OVERALL LEVEL	•	
мон		.240 In/Sec		
MIH		•	.062 G-s	
Pilli		.234 111/560	.002 G 3	
Clarification	Of Vibration U	 nite:		
	-> G-s RM			
Vel -	-> In/Sec PK			

As always, it has been a pleasure to serve North Shelby-Archaea Energy. If there are any comments or questions, do not hesitate to contact us.

Sincerely,

ISO Certified Vibration Analyst, Category III

Kevin W. Mozwell



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