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June 21, 2024

North Shelby Plant Millington, TN

The following is a summary of findings from the June 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**

### **Rinse Compressor**

Drive motor data still shows some 1-20 Khz vibration. The last reading showed amplitude to be 2.5 g's. Spectral data shows a noise floor starting around the 1500 hz range. This may be a lube issue or early stage bearing wear. For now, ensure motor bearings have clean adequate amounts of grease. We are monitoring this closely. Rated as a **CLASS I** defect for now.

## Cooling Fan 2 (new belt driven cooling fan)

The 37 hz vibration was present this survey. This appears to be 4 x fan rpm. May be blade pass if fan has 4 blades. Could also be resonance. There are also some signs of bearing wear beginning to show in fan spectra. May be due to style of bearing not allowing for axial load due to configuration of the fan wheel/shaft. We are monitoring this closely. Rated as a **CLASS I** defect.

#### **101 A Feed Compressor**

Compressor has elevated 1 x rpm vibration throughout the compressor. This may be load related but could also be a coupling or shaft issue. Check couplings and fasteners as time allows. Rated as a **CLASS II** Defect.

## 101-B Feed Compressor

**Equipment was not in service during this survey; however, the following still applies:** Compressor data shows some high frequency acceleration amplitude with noise floor. Peaks in spectral data suggest possible wear of internal compressor components. We are watching this closely. Rated as a **CLASS I** defect.

# Abbreviated Last Measurement Summary

Database: Clean Energy.rbm Area: millington plant

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD
301 FLARE - 301 FLARE BLOWE	R (17	-Jun-24)
	OVERALL LEVEL	1K-20KHz
MOH	.065 In/Sec	1.704 G-s
MOV	.151 In/Sec	.309 G-s
MIH	.078 In/Sec	1.145 G-s
MIV	.095 In/Sec	.118 G-s
MIA	.030 In/Sec	.297 G-s
EIH	.099 In/Sec	.294 G-s
EIV	.071 In/Sec	.430 G-s
EIA	.075 In/Sec	.137 G-s
EOH	.095 In/Sec	.413 G-s
EOV	.195 In/Sec	.5 <b>4</b> 7 G-s
RINSE COMP - RINSE COMPRESSO	(17-Jun-24)	
	OVERALL LEVEL	1K-20KHz
MOH	.117 In/Sec	2.546 G-s
MIH	.064 In/Sec	1.917 G-s

MIZ	<u>.</u>	.067	In/Sec	.216	G-s
III	ī	.068	In/Sec	. 938	G-s
IIZ			In/Sec		
IOI			In/Sec		
OII		.074	In/Sec	.848	
OI	<b>L</b>	.096	In/Sec	.150	G-s
OOF	I	.080	In/Sec	.862	G-s
VAC COMP	- VACUUM COMPRESS	OR		(17-Jun-24)	١
VIIC COM	VIICOUII COIIIILLED		L LEVEL		
		OVERAL	- /~	1 100	
MOH		.118	In/Sec	1.122	
MIH	[	.095	In/Sec	2.032	
MIZ	<b>L</b>	.070	In/Sec	.209	G-s
III	Ī	.073	In/Sec	.468	
IIZ		066	In/Sec	.078	
IOI		107	In/Sec	.882	
		.107	In/sec	.002	
OII		.100	In/Sec	.750	
OI	<u> </u>	.061	In/Sec	.197	
OOI	1	.091	In/Sec In/Sec	1.191	G-s
COOT.EXM1	- COOLING FAN 1			(17-Jun-24)	١
COOLFANI	- COOLING PAN I	O			
				1K-20I	
MOH	<u>[</u>	.058	In/Sec	. 938	
7OM	7	.132	In/Sec	.163	G-s
MIH	Ī	.039	In/Sec	. 699	
ZIM				.165	G-5
MIZ	<u>.</u>	.049	In/Sec	.135	G-s
COOLFAN2	- COOLING FAN 2			(17-Jun-24)	)
		OVERAI	L LEVEL	1K-20I	KHz
MOH	•	392	In/Sec	. 609	
		100	In/Sec	.003	
/OM					
MIH	[	.288	In/Sec	. 611	
/IM	•	.189	In/Sec	.206	G-s
MIZ			T- /0-	000	C-e
	<u> </u>	.261	In/Sec	.202	
EIF	I	.450	In/Sec	.509	G-s
EII EIV		.450 .173	In/Sec In/Sec	.509 .361	G-s G-s
EIF		.450 .173 .193	In/Sec In/Sec In/Sec	.509 .361 .314	G-s G-s G-s
EII EIV	[ ,	.450 .173 .193	In/Sec In/Sec	.509 .361 .314	G-s G-s G-s
EIF EIZ	[ , ,	.450 .173 .193 .586	In/Sec In/Sec In/Sec In/Sec	.509 .361 .314	G-s G-s G-s
EIF EIF EOF	[ , ,	.450 .173 .193 .586	In/Sec In/Sec In/Sec In/Sec	.509 .361 .314 .363	G-s G-s G-s
EIF EIF EOF EOF		.450 .173 .193 .586 .142	In/Sec In/Sec In/Sec In/Sec In/Sec	.509 .361 .314 .363 .288	G-s G-s G-s G-s
EIF EIF EOF EOF	[ , ,	.450 .173 .193 .586 .142	In/Sec In/Sec In/Sec In/Sec In/Sec	.509 .361 .314 .363 .288	G-s G-s G-s G-s
EIF EIV EOF EOV 101A COMP	- 101A FEED COMPR	.450 .173 .193 .586 .142 ESSOR OVERAL	In/Sec In/Sec In/Sec In/Sec In/Sec	.509 .361 .314 .363 .288 (17-Jun-24)	G-s G-s G-s G-s G-s
EIF EIF EOF EOF	- 101A FEED COMPR	.450 .173 .193 .586 .142 ESSOR OVERAI .166	In/Sec In/Sec In/Sec In/Sec In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-201	G-s G-s G-s G-s G-s
EIF EIV EOF EOV 101A COMP	- 101A FEED COMPRI	.450 .173 .193 .586 .142 ESSOR OVERAI .166	In/Sec In/Sec In/Sec In/Sec In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-201	G-s G-s G-s G-s G-s
EIF EIV EOF EOV 101A COMP MOF MIF	- 101A FEED COMPRI	.450 .173 .193 .586 .142 ESSOR OVERAI .166 .172	In/Sec In/Sec In/Sec In/Sec In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-201 .258 .253	G-s G-s G-s G-s G-s
EIF EIV EOF EOV 101A COMP MOF MIF	- 101A FEED COMPRI	.450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118	In/Sec In/Sec In/Sec In/Sec In/Sec LL LEVEL In/Sec In/Sec In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-201 .258 .253 .264	G-s G-s G-s G-s G-s G-s
EIF EIV EIV EOF EOV 101A COMP MOF MIF MIZ	- 101A FEED COMPRI	.450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-201 .258 .253 .264 1.138	G-s G-s G-s G-s G-s G-s G-s G-s
EIF EIV EIV EOV 101A COMP MOF MIF MIF	- 101A FEED COMPRI	.450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-201 .258 .253 .264 1.138 1.351	G-s G-s G-s G-s G-s G-s G-s G-s G-s
EIF EIV EIV EOF EOV 101A COMP MOF MIF MIZ	- 101A FEED COMPRI	.450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-201 .258 .253 .264 1.138 1.351 1.332	G-s G-s G-s G-s G-s G-s G-s G-s G-s
EIF EIV EIV EOV 101A COMP MOF MIF MIF	- 101A FEED COMPRI	.450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-20i .258 .253 .264 1.138 1.351 1.332 1.035	G-s G-s G-s G-s G-s G-s G-s G-s G-s
EIR EIV EIR EON 101A COMP MOR MIR MIR IIR IIR IOR	- 101A FEED COMPRI	.450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-20i .258 .253 .264 1.138 1.351 1.332 1.035	G-s G-s G-s G-s G-s G-s G-s G-s G-s G-s
EIR EIV EIR EON 101A COMP MOR MIR MIR IIR IIR IOR OIR	- 101A FEED COMPRI	.450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307 .388 .354	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-201 .258 .253 .264 1.138 1.351 1.332 1.035 4.204	G-s G-s G-s G-s G-s G-s G-s G-s G-s G-s
EIR EIV EIR EON 101A COMP MOR MIR MIR IIR IIR IOR	- 101A FEED COMPRI	.450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307 .388 .354	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-201 .258 .253 .264 1.138 1.351 1.332 1.035 4.204	G-s G-s G-s G-s G-s G-s G-s G-s G-s G-s
EIR EIV EIR EON 101A COMP MOR MIR IIR IIR IOR OOR	- 101A FEED COMPRI	.450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307 .388 .354 .146	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-201 .258 .253 .264 1.138 1.351 1.332 1.035 4.204 1.074	G-s G-s G-s G-s G-s G-s G-s G-s G-s G-s
EIR EIV EIR EON 101A COMP MOR MIR IIR IIR IOR OOR	- 101A FEED COMPRI	.450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307 .388 .354 .146	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-201 .258 .253 .264 1.138 1.351 1.332 1.035 4.204 1.074	G-s G-s G-s G-s G-s G-s G-s G-s G-s G-s
EIR EIV EIR EON 101A COMP MOR MIR IIR IIR IOR OOR	- 101A FEED COMPRI	.450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307 .388 .354 .146	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-201 .258 .253 .264 1.138 1.351 1.332 1.035 4.204 1.074	G-s G-s G-s G-s G-s G-s G-s G-s G-s G-s
EIR EIV EIR EON 101A COMP MOR MIR IIR IIR IOR OOR	- 101A FEED COMPRI	.450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307 .388 .354 .146	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-201 .258 .253 .264 1.138 1.351 1.332 1.035 4.204 1.074	G-s G-s G-s G-s G-s G-s G-s G-s G-s G-s
EIR EIV EIR EON 101A COMP  MOR MIR MIR IIR IIR IOR OIR OOR HX132A FAN	- 101A FEED COMPRI	.450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307 .388 .354 .146 COOLER I	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-20i .258 .253 .264 1.138 1.351 1.332 1.035 4.204 1.074 (17-Jun-24) .1K-20i .049	G-s G-s G-s G-s G-s G-s G-s G-s G-s G-s
EIR EIV EIR EON 101A COMP  MOR MIR MIR IIR IIR IOR OIR OOR HX132A FAN	- 101A FEED COMPRI	.450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307 .388 .354 .146 COOLER I	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-201 .258 .253 .264 1.138 1.351 1.332 1.035 4.204 1.074	G-s G-s G-s G-s G-s G-s G-s G-s G-s G-s
EIR EIV EIX EON 101A COMP  MOR MIR IIR IIR IOR OOR HX132A FAN EIR EOR	- 101A FEED COMPRI	.450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307 .388 .354 .146 COOLER I	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-201 .258 .253 .264 1.138 1.351 1.332 1.035 4.204 1.074 (17-Jun-24) .049 .092	G-s G-s G-s G-s G-s G-s G-s G-s G-s G-s
EIR EIV EIX EON 101A COMP  MOR MIR IIR IIR IOR OOR HX132A FAN EIR EOR	- 101A FEED COMPRI	.450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307 .388 .354 .146 COOLER I	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) 1K-201 .258 .253 .264 1.138 1.351 1.332 1.035 4.204 1.074 (17-Jun-24) .049 .092	G-s G-s G-s G-s G-s G-s G-s G-s G-s G-s
EIR EIV EIX EOR EOV  101A COMP  MOR MIR MIR IIR IOR OIR OOR HX132A FAN EIR EOR	- 101A FEED COMPRISE  - 101A FEED COMPRISE	. 450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307 .388 .354 .146 COOLER I OVERAI .049 .074	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-20i .258 .253 .264 1.138 1.351 1.332 1.035 4.204 1.074 (17-Jun-24) .049 .092	G-s G-s G-s G-s G-s G-s G-s G-s G-s G-s
EIR EIV EIX EON 101A COMP  MOR MIR IIR IIR IOR OOR HX132A FAN EIR EOR	- 101A FEED COMPRISE  - 101A FEED COMPRISE	. 450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307 .388 .354 .146 COOLER I OVERAI .049 .074	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-20i .258 .253 .264 1.138 1.351 1.332 1.035 4.204 1.074 (17-Jun-24) .1K-20i .049 .092 (17-Jun-24) .1K-20i .518	G-s G-s G-s G-s G-s G-s G-s G-s G-s G-s
EIR EIV EIX EOR EOV  101A COMP  MOR MIR MIR IIR IOR OIR OOR HX132A FAN EIR EOR	- 101A FEED COMPRISE  - 101A FEED COMPRISE	. 450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307 .388 .354 .146 COOLER I OVERAI .049 .074	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-20i .258 .253 .264 1.138 1.351 1.332 1.035 4.204 1.074 (17-Jun-24) .1K-20i .049 .092 (17-Jun-24) .1K-20i .518	G-s G-s G-s G-s G-s G-s G-s G-s G-s G-s
EIR EIV EIX EOR EOV  101A COMP  MOR MIR MIR IIR IIR IOR OOR HX132A FAN EIR EOR 451A PUMP	- 101A FEED COMPRISE  - 101A FEED COMPRISE	. 450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307 .388 .354 .146 COOLER I OVERAI .049 .074 P	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-20i .258 .253 .264 1.138 1.351 1.332 1.035 4.204 1.074 (17-Jun-24) .049 .092 (17-Jun-24) .1K-20i .049 .092	G-s G-s G-s G-s G-s G-s G-s G-s G-s G-s
EIR EIV EIX EOR EOV  101A COMP  MOR MIR MIR IIR IIR IOR OOR HX132A FAN EIR EOR 451A PUMP	- 101A FEED COMPRISE  - 101A FEED COMPRISE	. 450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307 .388 .354 .146 COOLER I OVERAI .049 .074 P	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-20i .258 .253 .264 1.138 1.351 1.332 1.035 4.204 1.074 (17-Jun-24) .049 .092 (17-Jun-24) .1K-20i .049 .092	G-s G-s G-s G-s G-s KHz s-s G-s G-s KHz s-s KHz s-s KHz s-s KHz s-s
EIR EIV EIX EON 101A COMP  MOR MIR MIR IIR IIR IOR OOR HX132A FAN EIR EOR 451A PUMP	- 101A FEED COMPRISE  - 101A FEED COMPRISE  - 451A VACCUM PUMI	. 450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307 .388 .354 .146 COOLER I OVERAI .049 .074 P	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-20i .258 .253 .264 1.138 1.351 1.332 1.035 4.204 1.074 (17-Jun-24) .1K-20i .049 .092 (17-Jun-24) .1K-20i .518 .268 .333 .429	G-s G-s G-s G-s G-s G-s KHz G-s-s G-s G-s KHz G-s G-s G-s G-s G-s G-s
EIR EIV EIX EON 101A COMP  MOR MIR MIR IIR IIR IOR OOR HX132A FAN EIR EOR 451A PUMP	- 101A FEED COMPRISE  - 101A FEED COMPRISE  - 451A VACCUM PUMI	. 450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307 .388 .354 .146 COOLER I OVERAI .049 .074 P	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-20i .258 .253 .264 1.138 1.351 1.332 1.035 4.204 1.074 (17-Jun-24) .1K-20i .049 .092 (17-Jun-24) .1K-20i .518 .268 .333 .429 .113	G-s G-s G-s G-s G-s KHz s-s KHz s-s KHz s-s KHz s-s KHz s-s KHz s-s KHz s-s G-s G-s G-s G-s
EIR EIV EIX EON 101A COMP  MOR MIR MIR IIR IIR IOR OOR HX132A FAN EIR EOR 451A PUMP	- 101A FEED COMPRISE  - 101A FEED COMPRISE  - 451A VACCUM PUMI	. 450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307 .388 .354 .146 COOLER I OVERAI .049 .074 P OVERAI .082 .081 .105 .135 .048 .213	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-20i .258 .253 .264 1.138 1.351 1.332 1.035 4.204 1.074 (17-Jun-24) .1K-20i .049 .092 (17-Jun-24) .1K-20i .518 .268 .333 .429 .113 .365	G-s G-s G-s G-s G-s KHz s-s KHz s-s KHz s-s KHz s-s KHz s-s KHz s-s KHz s-s G-s G-s G-s G-s
EIR EIV EIX EON 101A COMP  MOR MIR MIR IIR IIR IOR OOR HX132A FAN EIR EOR 451A PUMP	- 101A FEED COMPRISE  - 101A FEED COMPRISE  - 451A VACCUM PUMI	. 450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307 .388 .354 .146 COOLER I OVERAI .049 .074 P OVERAI .082 .081 .105 .135 .048 .213	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-20i .258 .253 .264 1.138 1.351 1.332 1.035 4.204 1.074 (17-Jun-24) .1K-20i .049 .092 (17-Jun-24) .1K-20i .518 .268 .333 .429 .113 .365	G-s G-s G-s G-s G-s KHz s-s KHz s-s KHz s-s KHz s-s KHz s-s KHz s-s KHz s-s G-s G-s G-s G-s G-s G-s G-s G-s G-s
EIR EIY EIY EOY 101A COMP  MOR MIR IIR IOR OOR HX132A FAN EIR EOR 451A PUMP  MOR MOY MIR MIX MIX EIR	- 101A FEED COMPRISE  - 101A FEED COMPRISE  - 451A VACCUM PUMI	. 450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307 .388 .354 .146 COOLER I OVERAI .049 .074 P OVERAI .082 .081 .105 .135 .048 .213 .146	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-20i .258 .253 .264 1.138 1.351 1.332 1.035 4.204 1.074 (17-Jun-24) .1K-20i .049 .092 (17-Jun-24) .1K-20i .518 .268 .333 .429 .113 .365 .141	G-s G-s G-s G-s G-s KHz s-s-s KHz s-s KHz s-s KHz s-s KHz s-s G-s G-s G-s G-s G-s G-s G-s G-s G-s
EIR EIY EIY EOY 101A COMP  MOR MIR IIR IOR OOR HX132A FAN EIR EOR 451A PUMP  MOR MOY MIR MIX EIR EIR EIR EIR EIR EIR	- 101A FEED COMPRISE  - 101A FEED COMPRISE  - 451A VACCUM PUMI	. 450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307 .388 .354 .146 COOLER I OVERAI .049 .074 P OVERAI .105 .135 .048 .213 .146 .116	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-20i .258 .253 .264 1.138 1.351 1.332 1.035 4.204 1.074 (17-Jun-24) .1K-20i .049 .092 (17-Jun-24) .1K-20i .518 .268 .333 .429 .113 .365 .141 .102	G-s G-s G-s G-s G-s KHz s-s-s KHz-s KHG-s-s KHG-s G-s G-s G-s G-s G-s G-s G-s G-s G-s
EIR EIY EIY EOY 101A COMP  MOR MIR IIR IOR OOR HX132A FAN EIR EOR 451A PUMP  MOR MOY MIR MIY EIR	- 101A FEED COMPRISE  - 101A FEED COMPRISE  - 451A VACCUM PUMI	. 450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307 .388 .354 .146 COOLER I OVERAI .049 .074 P OVERAI .105 .135 .048 .213 .146 .116 .230	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-20i .258 .253 .264 1.138 1.351 1.332 1.035 4.204 1.074 (17-Jun-24) .1K-20i .049 .092 (17-Jun-24) .1K-20i .518 .268 .333 .429 .113 .365 .141 .102 .394	G-s G-s G-s G-s G-s KHz s-s-s KHz-s G-s G-s G-s G-s G-s G-s G-s G-s G-s G
EIR EIY EIY EOY 101A COMP  MOR MIR IIR IOR OOR HX132A FAN EIR EOR 451A PUMP  MOR MOY MIR MIX EIR EIR EIR EIR EIR EIR	- 101A FEED COMPRISE  - 101A FEED COMPRISE  - 451A VACCUM PUMI	. 450 .173 .193 .586 .142 ESSOR OVERAI .166 .172 .118 .350 .454 .307 .388 .354 .146 COOLER I OVERAI .049 .074 P OVERAI .105 .135 .048 .213 .146 .116 .230	In/Sec	.509 .361 .314 .363 .288 (17-Jun-24) .1K-20i .258 .253 .264 1.138 1.351 1.332 1.035 4.204 1.074 (17-Jun-24) .1K-20i .049 .092 (17-Jun-24) .1K-20i .518 .268 .333 .429 .113 .365 .141 .102 .394	G-s G-s G-s G-s G-s KHz s-s-s KHz-s G-s G-s G-s G-s G-s G-s G-s G-s G-s G

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HX453A FAN - HX453A VAC PUMP OIL COOL FAN (17-Jun-24)
                                 OVERALL LEVEL 1K-20KHz
                                                     .158 G-s
.090 G-s
                                  .199 In/Sec
       MOH
                                  .125 In/Sec
       MTH
                                            (17-Jun-24)
451B PUMP - 451B VACCUM PUMP
                                 OVERALL LEVEL
                                                     1K-20KHz
                                   .052 In/Sec
                                                     .513 G-s
       MOH
                                                     .125 G-s
                                   .068 In/Sec
       MOV
                                   .067 In/Sec
                                                     .444 G-s
       MIH
                                                     .166 G-s
                                   .069 In/Sec
       MIV
                                                     .122 G-s
                                   .040 In/Sec
       MIA
                                   .186 In/Sec
                                                     .192 G-s
       EIH
                                                     .193 G-s
       EIV
                                   .160 In/Sec
        EIA
                                   .137 In/Sec
                                                       .175 G-s
                                   .202 In/Sec
       EOH
                                                       .734 G-s
                                   .217 In/Sec
       EOV
                                                       .138 G-s
HX453B FAN - HX453B VAC PUMP OIL COOL FAN (17-Jun-24)
                                 OVERALL LEVEL 1K-20KHz
       MOH
                                  .160 In/Sec
                                                      .215 G-s
       MIH
                                  .110 In/Sec
                                                      .152 G-s
                                              (17-Jun-24)
451C PUMP - 451C VACCUM PUMP
                                OVERALL LEVEL 1K-20KHz
                                                     .768 G-s
                                  .081 In/Sec
       MOH
                                 .195 G-s
.093 In/Sec .382 G-s
.141 In/Sec .096 G-s
.062 In/Sec .067 G-s
.147 In/Sec .958 G-s
.113 In/Sec .167 G-s
.114 In/Sec .234 G-s
.142 In/Sec .545 G-s
.167 In/Sec .089 G-c
                                   .082 In/Sec
                                                     .195 G-s
       MOV
       MIH
       MIV
       MIA
       EIH
       EIV
       EIA
       EOH
       EOV
HX453C FAN - HX453C VAC PUMP OIL COOL FAN (17-Jun-24)
                                 OVERALL LEVEL 1K-20KHz
       MOH
                                   .092 In/Sec
                                                     .263 G-s
       MIH
                                   .082 In/Sec
                                                      .162 G-s
451D PUMP - 451D VACCUM PUMP
                                               (17-Jun-24)
                                 OVERALL LEVEL
                                                      1K-20KHz
                                  .063 In/Sec 1.070 G-s
.068 In/Sec .314 G-s
.097 In/Sec 1.158 G-s
.067 In/Sec .238 G-s
       MOH
       MOV
       MTH
       MTV
                                  .038 In/Sec
                                                       .327 G-s
       MIA
                                  .175 In/Sec
                                                      .619 G-s
       EIH
       EIV
                                  .115 In/Sec
                                                      .240 G-s
                                                      .328 G-s
       EIA
                                  .106 In/Sec
                                   .156 In/Sec
       EOH
                                                      .270 G-s
                                                      .067 G-s
       EOV
                                   .206 In/Sec
HX453D FAN - HX453D VAC PUMP OIL COOL FAN (17-Jun-24)
                                 OVERALL LEVEL 1K-20KHz
                                                     .121 G-s
                                   .245 In/Sec
       MOH
                                                      .074 G-s
       MIH
                                   .176 In/Sec
506B COMP - 506B PRODUCT COMPRESSOR (17-Jun-24)
                                 OVERALL LEVEL 1K-20KHz
                                                     .242 G-s
                                   .049 In/Sec
       MOH
                                   .066 In/Sec
                                                      .356 G-s
       MIH
                                  .066 In/Sec .356 G-s

.058 In/Sec .190 G-s

.156 In/Sec .685 G-s

.147 In/Sec 1.067 G-s

.214 In/Sec 1.670 G-s

.266 In/Sec 1.065 G-s

.151 In/Sec 1.445 G-s
       MIA
        IIH
        IIA
        IOH
        OIH
        OIA
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OOH .232 In/Sec 1.282 G-s

HX507B FAN - HX507B GAS COOL FAN (17-Jun-24)

OVERALL LEVEL 1K-20KHz

MOH .101 In/Sec .046 G-s MIH .136 In/Sec .082 G-s

Clarification Of Vibration Units:

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. Maxwell



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