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September 18, 2020

Craig Lindsey Tetra Technologies West Memphis, AR

Craig,

The following is a summary of findings from the vibration survey at your facility. Please let us know if there are any questions or comments.

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 quaranty or warranty of the matters discussed herein.

P301

This unit appears to be in good condition. No actions are recommended.

P308

This unit appears to be in good condition. No actions are recommended.

P309

This unit appears to be in good condition. No actions are recommended.

P305

Motor vibration data indicates possible electrical fluting of the motor bearings. This does not appear to be a major issue at this time, and we will monitor this closely in the surveys to come. Rated as a **CLASS I** defect for now.

P307

This unit appears to be in good condition. No actions are recommended.

P306

The motor vibration data indicates possible electrical fluting of the motor bearings. This does not appear to be a major issue at this time. We will monitor this closely in the surveys to come. Rated as a **CLASS I** defect for now.

Abbreviated Last Measurement Summary

Database: TETRA TECHNOLOGIES.rbm
Area: TETRA WEST MEMPHIS
Route No. 1: TETRA WM

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD
P301 - P301	(09	-Sep-20)
	OVERALL LEVEL	1K-20KHz
MOH	.015 In/Sec	.244 G-s
MOV	.022 In/Sec	.166 G-s
MIH	.019 In/Sec	.285 G-s
MIV	.036 In/Sec	.328 G-s
MIA	.030 In/Sec	.145 G-s
PIH	.036 In/Sec	.195 G-s
PIV	.039 In/Sec	.098 G-s
POH	.022 In/Sec	.075 G-s
POV	.039 In/Sec	.134 G-s
POA	.029 In/Sec	.048 G-s
P308 - P308	(09	-Sep-20)
	OVERALL LEVEL	1K-20KHz
MOH	.040 In/Sec	.325 G-s
MOV	.028 In/Sec	.392 G-s
MIH	.047 In/Sec	.627 G-s
MIV	.042 In/Sec	.475 G-s
MIA	.035 In/Sec	.468 G-s
PIH	.054 In/Sec	.199 G-s
PIV	.038 In/Sec	.201 G-s
POH	.032 In/Sec	.062 G-s
POV	.028 In/Sec	.230 G-s
POA	.045 In/Sec	.156 G-s

P305	- P305	(09-Sep-20)				
		OVERALL	LEVEL 1K-	20KHz		
M	MOH	.061 In	/Sec 1.1	33 G-s		
M	VOI	.043 In	/Sec .6	93 G-s		
M	1IH	.044 In	/Sec . 6	74 G-s		
M	IIV	.046 In	/Sec .5	10 G-s		
M	1IA	.040 In	/Sec .7	65 G-s		
F	PIH	.168 In	/Sec .0	94 G-s		
F	PIV	.103 In	/Sec .1:	21 G-s		
F	POH	.086 In	/Sec .1	37 G-s		
F	POV	.062 In	/Sec .0	84 G-s		
F	POA	.070 In	/Sec .1	82 G-s		
P307	- P307		(09-Sep-20)			
		OVERALL		20KHz		
M	MOH	.024 In	/Sec .1			
M	1OV	.021 In	/Sec . 2:	26 G-s		
M	ITH	.026 In	/Sec .1	68 G-s		
M	IIV	.025 In	/Sec .1	83 G-s		
M	MIA AIN	.019 In	./Sec .0	58 G-s		
F	PIH	.076 In	/Sec .0	99 G-s		
F	PIV	.047 In		62 G-s		
P	POH	.034 In		45 G-s		
F	POV	.029 In	/Sec .1	47 G-s		
P	POA	.048 In	/Sec .1	72 G-s		
P306 - P306			(09-Sep-20)			
		OVERALL LEVEL 1K-20KHz				
	MOH	.042 In		04 G-s		
	OV	.042 In		60 G-s		
	IIH	.069 In	/Sec .7	03 G-s		
	IIV	.060 In		47 G-s		
	IIA	.057 In		42 G-s		
	PIH	.196 In		26 G-s		
	PIV	.133 In		10 G-s		
	POH	.160 In		57 G-s		
	POV	.134 In		77 G-s		
P	POA	.133 In	/Sec .4	34 G-s		
larificati	on Of Vibration Un:					

Cl

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

As always, it has been a pleasure to serve Tetra Technologies. If there are any comments or questions, do not hesitate to contact us.

Sincerely,

ISO Certified Vibration Analyst, Category III

Kevin W. Morruell



QualiTest. Diagnostics

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