HI-SPEED INDUSTRIAL SERVICE

QualiTest® Diagnostics

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November 20, 2023

Grammer Inc.
Shannon, MS

The following is a summary of findings from the vibration survey that was performed on November 15, 2023. Air compressors were not accessible during this survey.
Please note that only defects found are included in the summary report. An abbreviated last measurement survey report of all equipment is included at the end of this report.

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.

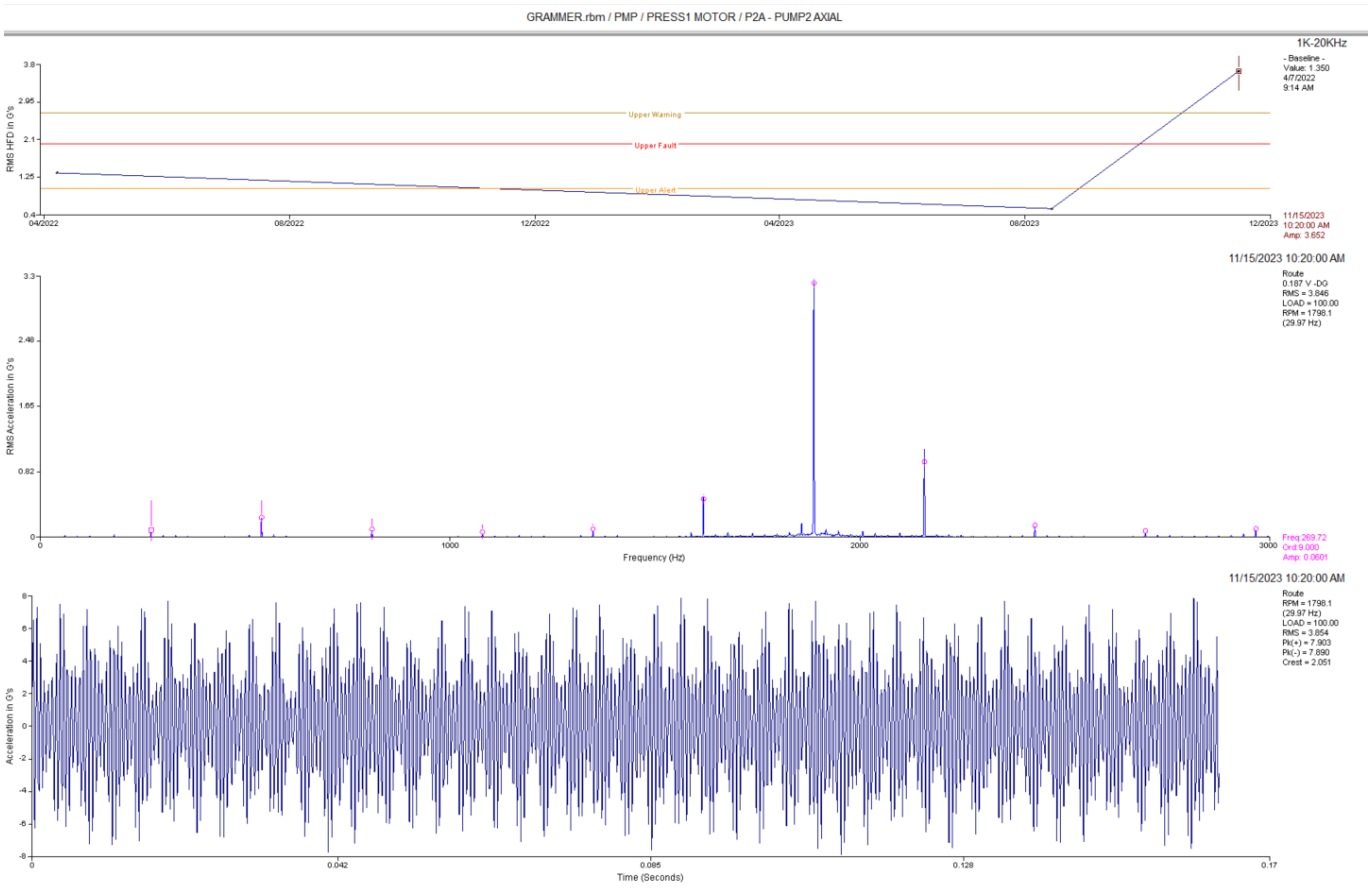
CLASS II: Defect (s) present that may cause problem in long term (2-6 months). Repair during normal maintenance scheduling. Continue to monitor.

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

Defect Summary

Press 1 Hyd. Pump 1 and 2 CLASS II



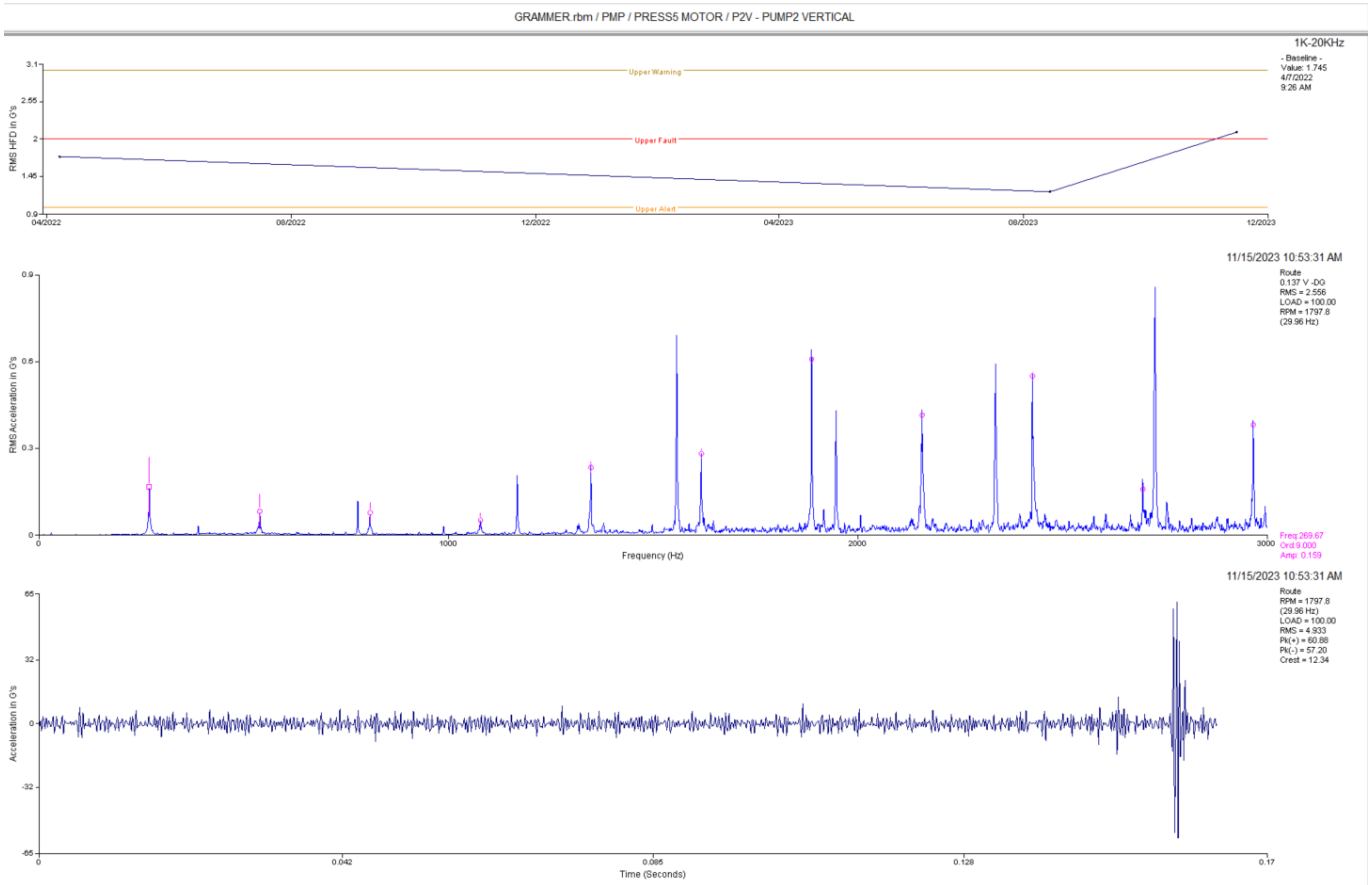
Observation:

Pump 2 data shows high frequency vibration that appears to be a harmonic of pump rpm. Several rpm harmonics are present in the axial data shown. Amplitude in waveform data is 15 g's peak to peak.

Recommendation:

Peaks present in this pump data usually indicate internal wear or restricted flow. For now, ensure pump filtering system (if equipped) is operating properly and not restricting pump flow. We will monitor this closely. Pump may need attention in the coming months.

Press 5 Hyd. Pump 2 **CLASS II**



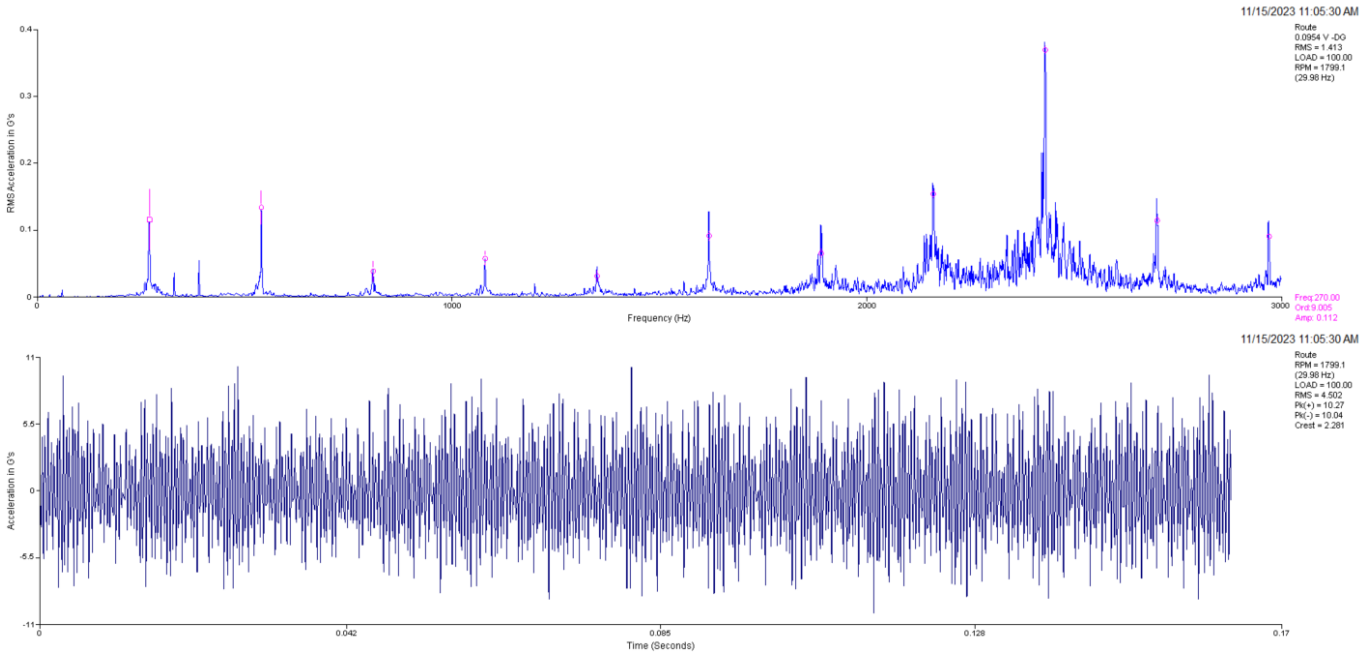
Observation:

Pump 2 data shows high frequency vibration that appears to be vane pass harmonics. Several rpm harmonics are present in the axial data shown. Amplitude in waveform data is over 60 g's peak.

Recommendation:

Peaks present in this pump data usually indicate internal wear or restricted flow. For now, ensure pump filtering system (if equipped) is operating properly and not restricting pump flow. We will monitor this closely. Pump may need attention in the coming months.

Press 8 Hyd. Pump 3 CLASS II



Observation:

Pump 2 data shows high frequency vibration that appears to be hydraulic vane pass related . Several rpm harmonics are present in the axial data shown. Amplitude in waveform data is over 60 g's peak.

Recommendation:

Peaks present in this pump data usually indicate internal wear or restricted flow. For now, ensure pump filtering system (if equipped) is operating properly and not restricting pump flow. We will monitor this closely. Pump may need attention in the coming months.

Abbreviated Last Measurement Summary

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Database: GRAMMER.rbm
Area: PRESS MOTORS-HYDRAULIC PUMPS
Route No. 1: HYD PUMPS

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD
P1-M2 - PRESS1 MOTOR	(15-Nov-23)	
	OVERALL LEVEL	1K-20KHz
MOH	.076 In/Sec	.331 G-s
MOV	.079 In/Sec	.235 G-s
MIH	.109 In/Sec	.690 G-s
MIV	.073 In/Sec	.350 G-s
MIA	.051 In/Sec	.656 G-s
P1A	.102 In/Sec	2.306 G-s
P1V	.139 In/Sec	1.129 G-s
P2A	.187 In/Sec	3.652 G-s
P2V	.047 In/Sec	.966 G-s
P3A	.083 In/Sec	.823 G-s
P3V	.092 In/Sec	.664 G-s
P3-M2 - PRESS3 MOTOR2	(15-Nov-23)	
	OVERALL LEVEL	1K-20KHz
MOH	.073 In/Sec	.190 G-s
MOV	.104 In/Sec	.212 G-s
MIH	.129 In/Sec	.225 G-s
MIV	.090 In/Sec	.389 G-s
MIA	.099 In/Sec	.331 G-s
P1A	.155 In/Sec	.833 G-s
P1V	.151 In/Sec	.293 G-s
P2A	.097 In/Sec	.316 G-s
P2V	.041 In/Sec	.329 G-s
P3A	.156 In/Sec	3.614 G-s
P3V	.174 In/Sec	.260 G-s
P4-M2 - PRESS4 MOTOR	(15-Nov-23)	
	OVERALL LEVEL	1K-20KHz
MOH	.034 In/Sec	.667 G-s
MOV	.031 In/Sec	.397 G-s
MIH	.024 In/Sec	.452 G-s
MIV	.035 In/Sec	.315 G-s
MIA	.111 In/Sec	.142 G-s
P1A	.045 In/Sec	.808 G-s
P1V	.375 In/Sec	1.002 G-s
P2A	.047 In/Sec	1.303 G-s
P2V	.049 In/Sec	.805 G-s
P3A	.038 In/Sec	.476 G-s
P3V	.051 In/Sec	.496 G-s
P5-M2 - PRESS5 MOTOR	(15-Nov-23)	
	OVERALL LEVEL	1K-20KHz
MOH	.087 In/Sec	1.026 G-s
MOV	.047 In/Sec	.565 G-s
MIH	.074 In/Sec	1.862 G-s
MIV	.128 In/Sec	2.761 G-s
MIA	.089 In/Sec	.481 G-s
P1A	.050 In/Sec	.789 G-s
P1V	.090 In/Sec	1.306 G-s
P2A	.164 In/Sec	1.872 G-s
P2V	.137 In/Sec	2.102 G-s
P3A	.127 In/Sec	.788 G-s
P3V	.143 In/Sec	1.224 G-s

P6-M2 - PRESS6 MOTOR (15-Nov-23)

	OVERALL LEVEL	1K-20KHz
MOH	.078 In/Sec	.214 G-s
MOV	.039 In/Sec	.144 G-s
MIH	.025 In/Sec	.212 G-s
MIV	.024 In/Sec	.294 G-s
MIA	.049 In/Sec	.623 G-s
P1A	.055 In/Sec	1.095 G-s
P1V	.097 In/Sec	1.479 G-s
P2A	.065 In/Sec	.744 G-s
P2V	.072 In/Sec	1.315 G-s
P3A	.027 In/Sec	.437 G-s
P3V	.104 In/Sec	.679 G-s

P7-M2 - PRESS7 MOTOR (15-Nov-23)

	OVERALL LEVEL	1K-20KHz
MOH	.129 In/Sec	.326 G-s
MOV	.080 In/Sec	.584 G-s
MIH	.136 In/Sec	.404 G-s
MIV	.098 In/Sec	1.341 G-s
MIA	.053 In/Sec	.199 G-s
P1A	.152 In/Sec	2.491 G-s
P1V	.115 In/Sec	.639 G-s
P2A	.141 In/Sec	.984 G-s
P2V	.190 In/Sec	2.589 G-s
P3A	.134 In/Sec	1.001 G-s
P3V	.083 In/Sec	1.160 G-s

P8-M2 - PRESS8 MOTOR (15-Nov-23)

	OVERALL LEVEL	1K-20KHz
MOH	.143 In/Sec	1.231 G-s
MOV	.067 In/Sec	.946 G-s
MIH	.090 In/Sec	1.472 G-s
MIV	.087 In/Sec	1.793 G-s
MIA	.057 In/Sec	1.005 G-s
P1A	.056 In/Sec	.498 G-s
P1V	.071 In/Sec	.884 G-s
P2A	.141 In/Sec	2.614 G-s
P2V	.162 In/Sec	3.587 G-s
P3A	.095 In/Sec	3.328 G-s
P3V	.085 In/Sec	1.811 G-s

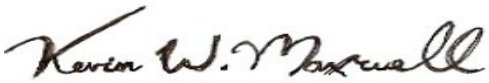
Clarification Of Vibration Units:

Acc --> G-s RMS

Vel --> In/Sec PK

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

Sincerely,



ISO Certified Vibration Analyst, Category III

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