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May 10, 2021

Kendall Jackson
Valero West Memphis Terminal
West Memphis, AR

The following is a summary of findings from the May 2021 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.

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

31-15-042 Short Horn Lateral Pump
Motor/Pump was not in service during this survey.

#1 Barge Loading Pump
Motor/Pump appeared to be operating at acceptable vibration levels during this survey.

#2 Barge Loading Pump
Motor/Pump appeared to be operating at acceptable vibration levels during this survey.

#3 Barge Loading Pump
Motor/Pump appeared to be operating at acceptable vibration levels during this survey.

#4 Barge Loading Pump
Motor has an increased vibration. Data shows highest vibration to be at the top of the motor. This could be caused by an issue with thrust bearing or an issue with the pump. It is highly recommended to uncouple the motor from the pump and performing vibration analysis on the motor solo as soon as practical. This will help determine if the pump is causing the high vibration in the motor. Rated as a **CLASS III** defect.

#8 LX Truck Loading Pump
Motor/Pump appeared to be operating at acceptable vibration levels during this survey.

#12 LX Truck Loading Pump
Motor/Pump appeared to be operating at acceptable vibration levels during this survey.

#13 XX Truck Loading Pump
Motor/Pump appeared to be operating at acceptable vibration levels during this survey.

#14 XX Truck Loading Pump
Motor/Pump appeared to be operating at acceptable vibration levels during this survey.

#17 LS Truck Loading Pump
Motor/Pump was not in service during this survey.

#15NL Truck Loading Pump
Pump data continues to show signs of bearing defects/wear in the pump. We will continue to monitor this closely. Rated as a **CLASS II** defect.

#18 NL Truck Loading Pump
Motor/Pump was not in service this survey.

#6 Transfer Pump
Motor/Pump was not in service during this survey.

#5 Truck Loading Pump
Motor/Pump appeared to be operating at acceptable vibration levels during this survey.

#7 Truck Loading Pump
Motor/Pump appeared to be operating at acceptable vibration levels during this survey.

#43 Bio-Diesel Pump North
Motor/Pump appeared to be operating at acceptable vibration levels during this survey.

#44 Bio-Diesel Pump Middle
Motor data is still showing a 1 x rpm vibration, especially in the inboard axial. This could be coupling related. Inspect coupling and alignment. Ensure motor does not have a soft foot condition. Motor drive end bearing data also indicates bearing defects. Inspect unit for these issues as time allows. We will monitor these issues closely. Rated as a **CLASS II** defect.

#45 Bio-Diesel Pump South
Data of the motor and pump indicates motor bearing issues and pump cavitation. Unit will likely need attention soon. Rated as a **CLASS II** defect for now.

Abbreviated Last Measurement Summary
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Database: west memphis.rbm
Station: WEST MEMPHIS TERMINAL

MEASUREMENT POINT		OVERALL LEVEL	HFD / VHFD
#1 BARGE	- #1 BARGE LOADING PUMP	(04-May-21)	
		OVERALL LEVEL	1 - 20 KHz
MOH		.136 In/Sec	.480 G-s
MOV		.076 In/Sec	.520 G-s
MIH		.096 In/Sec	.513 G-s
MIV		.061 In/Sec	.394 G-s
MIA		.056 In/Sec	.453 G-s
#2 BARGE	- #2 BARGE LOADING PUMP	(04-May-21)	
		OVERALL LEVEL	1 - 20 KHz
MOH		.152 In/Sec	.660 G-s
MOV		.086 In/Sec	.622 G-s
MIH		.084 In/Sec	.422 G-s
MIV		.068 In/Sec	.513 G-s
MIA		.070 In/Sec	.359 G-s
#3 BARGE	- #3 BARGE LOADING PUMP	(04-May-21)	
		OVERALL LEVEL	1 - 20 KHz
MOH		.072 In/Sec	.186 G-s
MOV		.183 In/Sec	.179 G-s
MIH		.082 In/Sec	.161 G-s
MIV		.120 In/Sec	.214 G-s
MIA		.117 In/Sec	.028 G-s
#4 BARGE	- #4 BARGE LOADING PUMP	(04-May-21)	
		OVERALL LEVEL	1 - 20 KHz
MOH		.362 In/Sec	.545 G-s
MOV		.352 In/Sec	.528 G-s
MIH		.182 In/Sec	.975 G-s
MIV		.187 In/Sec	1.726 G-s
MIA		.195 In/Sec	.084 G-s
#8LX PUMP	- #8 LX TRUCK LOADING PUMP	(04-May-21)	
		OVERALL LEVEL	1 - 20 KHz
MOH		.043 In/Sec	.413 G-s
MOV		.056 In/Sec	.667 G-s
MIH		.034 In/Sec	.494 G-s
MIV		.038 In/Sec	.317 G-s
MIA		.033 In/Sec	.251 G-s

#12LX PUMP - #12 LX TRUCK LOADING PUMP (04-May-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.221 In/Sec	.126 G-s
MOV	.150 In/Sec	.171 G-s
MIH	.128 In/Sec	.142 G-s
MIV	.077 In/Sec	.100 G-s
MIA	.095 In/Sec	.078 G-s

#13XX PUMP - #13 XX TRUCK LOADING PUMP (04-May-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.056 In/Sec	.398 G-s
MOV	.055 In/Sec	.552 G-s
MIH	.041 In/Sec	.327 G-s
MIV	.039 In/Sec	.441 G-s
MIA	.030 In/Sec	.260 G-s

#14XX PUMP - #14 XX TRUCK LOADING PUMP (04-May-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.078 In/Sec	.741 G-s
MOV	.065 In/Sec	.770 G-s
MIH	.067 In/Sec	.551 G-s
MIV	.054 In/Sec	.714 G-s
MIA	.049 In/Sec	.399 G-s

#15NL PUMP - #15 NL TRUCK LOADING PUMP (04-May-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.079 In/Sec	.195 G-s
MOV	.046 In/Sec	.480 G-s
MIH	.064 In/Sec	.165 G-s
MIV	.097 In/Sec	.204 G-s
MIA	.102 In/Sec	.085 G-s
EIH	.187 In/Sec	2.485 G-s
EIV	.191 In/Sec	2.215 G-s
EIA	.060 In/Sec	.488 G-s
EOH	.123 In/Sec	.705 G-s
EOV	.134 In/Sec	.571 G-s
EOA	.095 In/Sec	.734 G-s

#18NL PUMP - #18 NL TRUCK LOADING PUMP (04-May-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.043 In/Sec	.313 G-s
MOV	.074 In/Sec	.181 G-s
MIH	.032 In/Sec	.251 G-s
MIV	.153 In/Sec	.202 G-s
MIA	.090 In/Sec	.081 G-s
EIH	.096 In/Sec	.349 G-s
EIV	.232 In/Sec	.384 G-s
EIA	.114 In/Sec	.354 G-s
EOH	.082 In/Sec	.383 G-s
EOV	.113 In/Sec	.605 G-s
EOA	.137 In/Sec	.371 G-s

#5TRCKLOAD - #5 TRUCK LOADING PUMP (04-May-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.102 In/Sec	.581 G-s
MOV	.104 In/Sec	.421 G-s
MIH	.122 In/Sec	1.596 G-s
MIV	.288 In/Sec	1.963 G-s
MIA	.174 In/Sec	.391 G-s
EIH	.173 In/Sec	.275 G-s
EIV	.327 In/Sec	.148 G-s
EIA	.177 In/Sec	.256 G-s
EOH	.123 In/Sec	.490 G-s
EOV	.168 In/Sec	.337 G-s
EOA	.164 In/Sec	.401 G-s

#7TRCKLOAD - #7 TRUCK LOADING PUMP (04-May-21)

	OVERALL LEVEL	1 - 20 KHz
MOH	.084 In/Sec	.147 G-s
MOV	.082 In/Sec	.263 G-s

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            MIH                      .054 In/Sec       .102 G-s
            MIV                      .236 In/Sec       .244 G-s
            MIA                      .142 In/Sec       .073 G-s
            EIH                      .086 In/Sec       .834 G-s
            EIV                      .231 In/Sec       .533 G-s
            EIA                      .134 In/Sec       .277 G-s
            EOH                      .107 In/Sec       .516 G-s
            EOV                      .118 In/Sec       .384 G-s
            EOA                      .150 In/Sec       .326 G-s

      #43BOIDSLP - #43 BIO-DIESEL PUMP NORTH     (04-May-21)
                                  OVERALL LEVEL     1 - 20 KHz
            MOH                      .061 In/Sec       .089 G-s
            MOV                      .068 In/Sec       .128 G-s
            MIH                      .036 In/Sec       .100 G-s
            MIV                      .034 In/Sec       .114 G-s
            MIA                      .061 In/Sec       .113 G-s
            EIH                      .351 In/Sec       .647 G-s
            EIV                      .360 In/Sec       .620 G-s
            EIA                      .129 In/Sec       .542 G-s
            EOH                      .179 In/Sec       .395 G-s
            EOV                      .276 In/Sec       .521 G-s
            EOA                      .101 In/Sec       .927 G-s

      #44BOIDSLP - #44 BIO-DIESEL PUMP MIDDLE    (04-May-21)
                                  OVERALL LEVEL     1 - 20 KHz
            MOH                      .219 In/Sec      1.067 G-s
            MOV                      .251 In/Sec      1.805 G-s
            MIH                      .213 In/Sec      2.029 G-s
            MIV                      .134 In/Sec      1.535 G-s
            MIA                      .350 In/Sec      1.743 G-s
            EIH                      .174 In/Sec       .580 G-s
            EIV                      .194 In/Sec       .473 G-s
            EIA                      .045 In/Sec       .380 G-s
            EOH                      .184 In/Sec       .333 G-s
            EOV                      .180 In/Sec       .277 G-s
            EOA                      .137 In/Sec       .371 G-s

      #45BOIDSLP - #45 BIO-DIESEL PUMP SOUTH     (04-May-21)
                                  OVERALL LEVEL     1 - 20 KHz
            MOH                      .093 In/Sec      1.213 G-s
            MOV                      .089 In/Sec      1.292 G-s
            MIH                      .090 In/Sec      2.376 G-s
            MIV                      .117 In/Sec      2.505 G-s
            MIA                      .071 In/Sec      2.093 G-s
            EIH                      .234 In/Sec       .972 G-s
            EIV                      .347 In/Sec      1.101 G-s
            EIA                      .147 In/Sec      1.780 G-s
            EOH                      .240 In/Sec      1.620 G-s
            EOV                      .394 In/Sec      1.520 G-s
            EOA                      .205 In/Sec      1.886 G-s

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   Clarification Of Vibration Units:
      Acc      -->  G-s      RMS
      Vel      -->  In/Sec   PK
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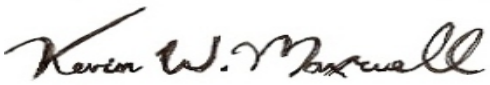
As always, it has been a pleasure to serve the Valero West Memphis Truck Terminal. If there are any comments or questions, do not hesitate to contact us.

Sincerely,



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