

7030 Ryburn Dr. Millington, TN

Phone: (901) 873-5300

Fax: (901) 873-5301

www.gohispeed.com

July 25, 2022

Steve Benesch Valero West Memphis Terminal West Memphis, AR

Steve,

The following is a summary of findings from the July 2022 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.

**<u>Class IV</u>**: 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.

# 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/Pump was not in service during this survey.

# #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 data shows an increase in high frequency amplitude. Spectral data indicates some bearing defects may be present in the motor bearings. Inspect motor as time allows. Rated as a **CLASS II** defect.

## #7 Truck Loading Pump

Motor/Pump appeared to be operating at acceptable vibration levels during this survey.

#### #43 Bio-Diesel Pump North

Pump has .5 ips amplitude in the drive end horizontal. Data shows a lot of the vibration to be around 4 x rpm. This may be vane pass if impeller has four vanes. This could be hydraulic related noise due to the pump running off the pump curve. We will monitor this closely. Rated as a **CLASS I** defect.

#### #44 Bio-Diesel Pump Middle

Motor data is still showing elevated 1 x rpm vibration, especially in the inboard axial. Amplitude is .9 ips. This is very high and 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 III** defect.

#### #45 Bio-Diesel Pump South

Data of the motor and pump indicates motor bearing issues and pump cavitation. Unit will likely need attention in the next few months. Rated as a **CLASS II** defect for now.

Abbreviated Last Measurement Summary

Database: west memphis.rbm Station: WEST MEMPHIS TERMINAL

Route No. 1: VALERO WM OVERALL LEVEL HFD / VHFD MEASUREMENT POINT -----\_\_\_\_\_ \_\_\_\_\_ #1 BARGE - #1 BARGE LOADING PUMP (22-Jul-22) 
 OVERALL LEVEL
 1 - 20 KHz

 .229 In/Sec
 .949 G-s

 154 In/Sec
 .922 G-s
MOH - MOTOR OUTBOARD HORIZONTAL MOV - MOTOR OUTBOARD VERTICAL MIH - MOTOR INBOARD HORIZONTAL MIV - MOTOR INBOARD VERTICAL MIA - MOTOR INBOARD AXIAL 
 .154 In/Sec
 .862 G-s

 .124 In/Sec
 .733 G-s

 .078 In/Sec
 .857 G-s

 .123 In/Sec
 .915 G-s
.862 G-s MIA - MOTOR INBOARD AXIAL #2 BARGE-#2 BARGE LOADING PUMP(22-Jul-22)<br/>OVERALL LEVEL1-20 KHzMOH -MOTOR OUTBOARD HORIZONTAL.068 In/Sec.642 G-sMOV -MOTOR OUTBOARD VERTICAL.088 In/Sec2.327 G-sMIH -MOTOR INBOARD HORIZONTAL.039 In/Sec.398 G-sMIV -MOTOR INBOARD VERTICAL.042 In/Sec.516 G-sMIA -MOTOR INBOARD AXIAL.035 In/Sec.400 G-s .400 G-s .035 In/Sec MIA - MOTOR INBOARD AXIAL #3 BARGE-#3 BARGE LOADING PUMP(22-Jul-22)<br/>OVERALL LEVEMOH -MOTOR OUTBOARD HORIZONTAL.083 In/SecMOV -MOTOR OUTBOARD VERTICAL.192 In/SecMIH -MOTOR INBOARD HORIZONTAL.090 In/SecMIV -MOTOR INBOARD VERTICAL.156 In/SecMIA -MOTOR INBOARD AXIAL.100 In/Sec OVERALL LEVEL 1 - 20 KHz .083 In/Sec .286 G-s .192 In/Sec .364 G-s .090 In/Sec .275 G-s .156 In/Sec .283 G-s .100 In/Sec .410 G-s MIA - MOTOR INBOARD AXIAL #8LX PUMP - #8 LX TRUCK LOADING PUMP (22-Jul-22) 
 OVERALL LEVEL
 1 - 20 KHz

 .054 In/Sec
 .660 G-s

 .087 In/Sec
 .245 G-s
MOH - MOTOR OUTBOARD HORIZONTAL MON - MOTOR OUTBOARD HORIZONTAL MOV - MOTOR OUTBOARD VERTICAL MIH - MOTOR INBOARD HORIZONTAL MIV - MOTOR INBOARD VERTICAL MIA - MOTOR INBOARD AXIAL .036 In/Sec .629 G-s .069 In/Sec .320 G-s .050 In/Sec .369 G-s MIA - MOTOR INBOARD AXIAL #12LX PUMP - #12 LX TRUCK LOADING PUMP (22-Jul-22) MOH - MOTOR OUTBOARD HORIZONTAL MOV - MOTOR OUTBOARD VERTICAL OVERALL LEVEL 1 - 20 KHz .253 In/Sec .108 G-s .211 In/Sec .042 G-s

MIH - MOTOR INBOARD HORIZONTAL	.138 In/Sec	.217 G-s
MIV - MOTOR INBOARD VERTICAL	.081 In/Sec	.042 G-s
MIA - MOTOR INBOARD AXIAL	.060 In/Sec	.063 G-s
#13XX PUMP - #13 XX TRUCK LOADING PUMP	(22-Jul-22)	
	OVERALL LEVEL	1 - 20 KHz
MOH - MOTOR OUTBOARD HORIZONTAL	.078 In/Sec	.278 G-s
MOV - MOTOR OUTBOARD VERTICAL	.093 In/Sec	.142 G-s
MIH - MOTOR INBOARD HORIZONTAL	.054 In/Sec	.327 G-s
MTV - MOTOR INBOARD VERTICAL	085 In/Sec	075 G-s
MIA - MOTOR INBOARD AXIAL	.054 In/Sec	.058 G-s
#14XX PUMP - #14 XX TRUCK LOADING PUMP	(22-Jul-22)	
	OVERALL LEVEL	1 - 20 KHz
MOH - MOTOR OUTBOARD HORIZONTAL	.083 In/Sec	.481 G-s
MOV - MOTOR OUTBOARD VERTICAL	.103 In/Sec	.152 G-s
MIH - MOTOR INBOARD HORIZONTAL	.083 In/Sec	.358 G-s
MIV - MOTOR INBOARD VERTICAL	.077 In/Sec	.098 G-s
MIA - MOTOR INBOARD AXIAL	.076 In/Sec	.110 G-s
#15NL PUMP - #15 NL TRUCK LOADING PUMP	(22-Jul-22)	
	OVERALL LEVEL	1 - 20 KHz
MOH - MOTOR OUTBOARD HORIZONTAL	.065 In/Sec	.176 G-s
MOV - MOTOR OUTBOARD VERTICAL	061 In/Sec	.078 G-s
MTH - MOTOR INBOARD HORIZONTAL	055 Tn/Sec	171 G-s
MIN MOTOR INBOARD NERTICAL	057 In/Sec	059 C-C
MIV - MOTOR INBOARD VERITCAL		.059 G-S
MIA - MOTOR INBOARD AXIAL	.055 IN/Sec	.081 G-S
EIH - EQUIPMENT INBOARD HORIZONTAL	.120 In/Sec	1.235 G-S
EIV - EQUIPMENT INBOARD VERTICAL	.210 In/Sec	.626 G-s
EIA - EQUIPMENT INBOARD AXIAL	.142 In/Sec	.987 G-s
EOH - EQUIPMENT OUTBOARD HORIZONTAL	.091 In/Sec	.510 G-s
EOV - EQUIPMENT OUTBOARD VERTICAL	.159 In/Sec	.350 G-s
EOA - EQUIPMENT OUTBOARD AXIAL	.100 In/Sec	.353 G-s
#5TPCKIOND - #5 TPUCK LONDING DUMP	(22-111-22)	
#SIRCKHOAD = #S IROCK HOADING FOMP	(ZZ-UUI-ZZ)	1 - 20 KH-
NOU NOTOD OUTDOADD HODICONTAL	171 Ja / Coo	1 - 20 KHZ
MOH - MOTOR OUTBOARD HORIZONTAL	.1/1 In/Sec	1.053 G-s
MOV - MOTOR OUTBOARD VERTICAL	.183 In/Sec	.5/0 G-s
MIH - MOTOR INBOARD HORIZONTAL	.127 In/Sec	3.361 G-s
MIV - MOTOR INBOARD VERTICAL	.220 In/Sec	1.079 G-s
MIA - MOTOR INBOARD AXIAL	.143 In/Sec	1.162 G-s
EIH - EQUIPMENT INBOARD HORIZONTAL	.151 In/Sec	.545 G-s
EIV - EQUIPMENT INBOARD VERTICAL	.229 In/Sec	.335 G-s
EIA - EQUIPMENT INBOARD AXIAL	.097 In/Sec	.145 G-s
EOH - EQUIPMENT OUTBOARD HORIZONTAL	.152 In/Sec	.331 G-s
EOV - EQUIPMENT OUTBOARD VERTICAL	.223 In/Sec	.554 G-s
EOA - EQUIPMENT OUTBOARD AXIAL	.178 In/Sec	.628 G-s
#7TRCKLOAD - #7 TRUCK LOADING PUMP	(22-Jul-22)	
	OVERALL LEVEL	1 - 20 KHz
MOH - MOTOR OUTBOARD HORTZONTAL	150 Tn/Sec	094 G-s
MOV - MOTOR OUTBOARD VERTICAL	254 Tn/Sec	044 G-s
MTH - MOTOR INBOARD HORIZONTAL	117 In/Sec	111 C-6
MIN MOTOR INBOARD NERTICAL	259 Tp/Sec	042 C-C
MIV - MOTOR INBOARD VERITCAL	.258 III/Sec	.042 G-S
MIA - MOTOR INBOARD AXIAL	.083 IN/Sec	.039 G-S
EIH - EQUIPMENT INBOARD HORIZONTAL	.1/9 In/Sec	.165 G-S
EIV - EQUIPMENT INBOARD VERTICAL	.303 In/Sec	.245 G-s
EIA - EQUIPMENT INBOARD AXIAL	.203 In/Sec	.175 G-s
EOH - EQUIPMENT OUTBOARD HORIZONTAL	.246 In/Sec	.185 G-s
EOV - EQUIPMENT OUTBOARD VERTICAL	.170 In/Sec	.222 G-s
EOA - EQUIPMENT OUTBOARD AXIAL	.198 In/Sec	.164 G-s
#43BOIDSLP - #43 BIO-DIESEL PUMP NORTH	(22-Jul-22)	
	OVERALL LEVEL	1 - 20 KHz
MOH - MOTOR OUTBOARD HORIZONTAL	.085 In/Sec	.336 G-s
MOV - MOTOR OUTBOARD VERTICAL	.180 In/Sec	.082 G-s
MIH - MOTOR INBOARD HORIZONTAL	.042 In/Sec	.381 G-s
MIV - MOTOR INBOARD VERTICAL	.121 In/Sec	.065 G-8
MTA - MOTOR INBOARD AXIAL	061  Tr/Sec	058 6-6
FTH - FOULDMENT INDOND HODIZONTAL	506 Th/Sec	945 C-C
TIL EQUIPMENT INDUARD HURLLUNTAL		.040 G-S

EIV - EQUIPMENT INBOARD VERTICAL	.339 In/Sec	.315 G-s
EIA - EQUIPMENT INBOARD AXIAL	.137 In/Sec	.323 G-s
EOH - EQUIPMENT OUTBOARD HORIZONTAL	.265 In/Sec	2.048 G-s
EOV - EQUIPMENT OUTBOARD VERTICAL	.574 In/Sec	1.699 G-s
EOA - EQUIPMENT OUTBOARD AXIAL	.288 In/Sec	.918 G-s
#44BOIDSLP - #44 BIO-DIESEL PUMP MIDDLE	(22-Jul-22)	
	OVERALL LEVEL	1 - 20 KHz
MOH - MOTOR OUTBOARD HORIZONTAL	.311 In/Sec	1.194 G-s
MOV - MOTOR OUTBOARD VERTICAL	.651 In/Sec	1.122 G-s
MIH - MOTOR INBOARD HORIZONTAL	.250 In/Sec	2.447 G-s
MIV - MOTOR INBOARD VERTICAL	.190 In/Sec	1.158 G-s
MIA - MOTOR INBOARD AXIAL	.883 In/Sec	.566 G-s
EIH - EQUIPMENT INBOARD HORIZONTAL	.267 In/Sec	.542 G-s
EIV - EQUIPMENT INBOARD VERTICAL	.164 In/Sec	.350 G-s
EIA - EQUIPMENT INBOARD AXIAL	.088 In/Sec	.630 G-s
EOH - EQUIPMENT OUTBOARD HORIZONTAL	.193 In/Sec	.830 G-s
EOV - EQUIPMENT OUTBOARD VERTICAL	.349 In/Sec	.396 G-s
EOA - EQUIPMENT OUTBOARD AXIAL	.256 In/Sec	.365 G-s
#45BOIDSLP - #45 BIO-DIESEL PUMP SOUTH	(22-Jul-22)	
	OVERALL LEVEL	1 - 20 KHz
MOH - MOTOR OUTBOARD HORIZONTAL	.150 In/Sec	1.753 G-s
MOV - MOTOR OUTBOARD VERTICAL	.114 In/Sec	.869 G-s
MIH - MOTOR INBOARD HORIZONTAL	.173 In/Sec	2.067 G-s
MIV - MOTOR INBOARD VERTICAL	.106 In/Sec	1.450 G-s
MIA - MOTOR INBOARD AXIAL	.179 In/Sec	.855 G-s
EIH - EQUIPMENT INBOARD HORIZONTAL	.209 In/Sec	.788 G-s
EIV - EQUIPMENT INBOARD VERTICAL	.285 In/Sec	.852 G-s
EIA - EQUIPMENT INBOARD AXIAL	.208 In/Sec	.708 G-s
EOH - EQUIPMENT OUTBOARD HORIZONTAL	.269 In/Sec	.959 G-s
EOV - EQUIPMENT OUTBOARD VERTICAL	.529 In/Sec	.514 G-s
EOA - EQUIPMENT OUTBOARD AXIAL	.171 In/Sec	.662 G-s
Clarification Of Vibration Units:		
$\frac{1}{1} = \frac{1}{1} $		

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,

Keven W. Maxwell

ISO Certified Vibration Analyst, Category III



QualiTest Diagnostics Cell: 901-486-4565 Email: <u>kwilliam@gohispeed.com</u>