

7030 Ryburn Dr. Millington, TN

Phone: (901) 873-5300

Fax: (901) 873-5301

www.gohispeed.com

April 10<sup>th</sup>, 2023

Craig Lindsey Tetra Technologies West Memphis, AR

Craig,

The following is a summary of findings from the vibration survey that was performed on 4/4/23. We plan on coming back out at a later date to collect data on the missed machinery.

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.

## <u>P305</u>

Motor data indicates defects are present in motor bearings. Inspect motor as time allows. Rated as a CLASS II defect.

## <u>P307</u>

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.

## <u>P309</u>

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

### <u>P312</u>

Motor data indicates defects are present in motor bearings. Inspect motor as time allows. Rated as a CLASS II defect.

# <u>P314</u>

This unit appears to be in good condition. No action is recommended.

### <u>P315</u>

This unit appears to be in good condition. No action is recommended.

#### <u>P402</u>

This unit appears to be in good condition. No action is recommended.

### <u>P415</u>

This unit appears to be in good condition. No action is recommended.

### <u>P416</u>

This unit appears to be in good condition. No action is recommended.

### <u>P421</u>

This unit appears to be in good condition. No action is recommended.

#### <u>P424</u>

This unit appears to be in good condition. No action is recommended.

### <u>P501</u>

This unit appears to be in good condition. No action is recommended.

### <u>P700</u>

This unit appears to be in good condition. No action is recommended.

### <u>P702</u>

This unit appears to be in good condition. No action is recommended.

### <u>P604</u>

This unit appears to be in good condition. No action is recommended.

	Database: Area:	TETRA TETRA	TECHNOLOGIES.rbm NEW	
MEASU	REMENT POINT		OVERALL LEVEL	HFD / VHFD
305	- PUMP	305	(0	4-Apr-23)
			OVERALL LEVEL	1 - 20 KHz
	MOH		.097 In/Sec	1.108 G-s
	MOV		.066 In/Sec	.725 G-s
	MIH		.106 In/Sec	2.438 G-s
	MIV		.091 In/Sec	.988 G-s
	MIA		.085 In/Sec	1.546 G-s
	EIA		.129 In/Sec	.18/ G-S
	EIH		.143 In/Sec	.4/4 G-S
	EIV		195 Tp/Sec	.170 G-S
	FOV		107 In/Sec	.327 G-s
	HOV		.107 117 560	.210 9 5
307	- PUMP	307	OVERALL LEVEL	4-Apr-23)
	мон			276 G-s
	MOV		037 In/Sec	066 G-s
	MTH		.022 In/Sec	.231 G-s
	MIV		.035 In/Sec	.286 G-s
	MIA		.018 In/Sec	.153 G-s
	EIA		.064 In/Sec	.227 G-s
	EIH		.129 In/Sec	.224 G-s
	EIV		.060 In/Sec	.346 G-s
	EOH		.062 In/Sec	.286 G-s
	EOV		.057 In/Sec	.233 G-s
308	- PUMP	308	(0)	4-Apr-23)
			OVERALL LEVEL	1 - 20 KHz
	MOH		.060 In/Sec	.289 G-s
	MOV		.058 In/Sec	.106 G-s
	MIH		.049 In/Sec	.290 G-s
	MIV		.047 In/Sec	.120 G-s
	MIA		.033 In/Sec	.107 G-s
	EIA		.055 IN/Sec	.142 G-S
	EIN		071 In/Sec	.172 G-S
	EOH		058 In/Sec	182 G-s
	EOV		.050 In/Sec	.123 G-s
309	- ΡΙΙΜΡ	309	(0)	4-Apr-23)
		202	OVERALL LEVEL	1 - 20 KHz
	MOH		.049 In/Sec	.234 G-s
	MOV		.056 In/Sec	.088 G-s
	MIH		.041 In/Sec	.354 G-s
	MIV		.058 In/Sec	.163 G-s
	MIA		.041 In/Sec	.205 G-s
	EIA		.035 In/Sec	.208 G-s
	EIH		.040 In/Sec	.335 G-s
	EIV		.046 In/Sec	.125 G-s
	EOH		.052 In/Sec	.248 G-s
	FOV		040 TD/SOC	150 C-C

312		- PUMP	312		(	(04-Apr	-23)	)
				OVERAL	L LEVEL	1	- 20	0 KHz
	MOH			.104	In/Sec	1.	258	G-s
	MOV			.152	In/Sec		506	G-s
	MIH			.115	In/Sec	1.	922	G-s
	MIV			.253	In/Sec		829	G-s
	МТА			045	In/Sec		403	G-s
	FTA			051	In/Sec	•	149	G-9
	EIA ETU			.031	In/Sec	•	112	G 3 C-C
	E T 17			.045	In/Sec	•	104	6-5
	ETA ETA			.065	In/Sec	•	104	G-S
	EOH			.041	In/Sec	•	124	G-S
	EOV			.042	In/Sec	•	163	G-s
314		- PUMP	314			(04-Apr	-23)	)
				OVERAL	L LEVEL	1	- 20	) KHz
	MOH			.012	In/Sec	•	159	G-s
	MOV			.016	In/Sec	•	050	G-s
	MIH			.014	In/Sec	•	232	G-s
	MIV			.024	In/Sec		068	G-s
	MIA			.011	In/Sec		091	G-s
	EIA			.017	In/Sec		042	G-s
	EIH			.023	In/Sec		085	G-s
	EIV			.023	In/Sec		082	G-s
	EOH			020	Tn/Sec		034	G-s
	EOV			.016	In/Sec		047	G-s
315		- PUMP	315			(04-Apr	-23)	)
				OVERAL	L LEVEL	1	- 20	0 KHz
	MOH			.054	In/Sec		230	G-s
	MOV			053	Tn/Sec		172	G-s
	мтн			077	In/Sec	•	401	G-9
	MTV			066	In/Sec	•	120	G 3 C-s
	MTA			.000	In/Sec	•	111	6-5
	MIA			.081	In/Sec	•	111	G-S
	EIA			.031	In/Sec	•	205	G-S
	EIH			.047	In/Sec	•	294	G-s
	EIV			.048	In/Sec	•	435	G-s
	EOH			.037	In/Sec	•	243	G-s
	EOV			.038	In/Sec	•	316	G-s
							~ ~ .	
402		- PUMP	402			(04-Apr	-23)	)
				OVERAL	L LEVEL	1	- 20	0 KHz
	MOH			.045	In/Sec	•	556	G-s
	MOV			.034	In/Sec	•	170	G-s
	MIH			.047	In/Sec	•	880	G-s
	MIV			.036	In/Sec		174	G-s
	MIA			.013	In/Sec		485	G-s
	EIA			.068	In/Sec		070	G-s
	EIH			.048	In/Sec		176	G-s
	EIV			.068	In/Sec		080	G-s
	EOH			.048	In/Sec		277	G-s
	EOV			.050	In/Sec		063	G-s
					·			
415		- PUMP	415			(04-Apr	-23)	)
				OVERAL	L LEVEL	1	- 20	0 KHz
	MOH			.078	In/Sec		693	G-s
	MOV			.135	In/Sec		517	G-s
	мін			.084	In/Sec		776	G-s
	MIV			158	In/Sec		499	G-s
	MTA			102	In/Sec	•	445	G-s
	FTA			0.202	In/Sec	•	482	G-6
	ETH ETH			.004	IN/800	•	724	G-s
	51U 51U			.070	II/ Sec	•	022	G-S
	ETA ETA			.052	IN/Sec	•	033	G-S
	FOH			.040	IN/Sec	•	027	G-S
	FOA			.052	in/Sec	•	417	G-S
116			416			(01-7	-00	`
410		FOMP	410		.T. TEX7ET	,∪-a-Apr 1	-23)	/ )
	MOU			USE CARKYT		т	200	C-c
	MON			.033	III/ SeC	•	215	G-5 C
	MTT			.038	III/ SeC	•	ZT2	G-S
	MTH			.045	TIL Sec	•	<b>J02</b>	G-S

	MIV	.048 In/Sec	.435 G-s
	мта	.049 In/Sec	442 G-s
	 	096 Tp/Soc	170 C-2
	51A	.000 11/300	.170 G-S
	EIH	.154 In/Sec	.424 G-s
	EIV	.046 In/Sec	.178 G-s
	EOH	.050 In/Sec	474 G-s
	EOU		100 0 -
	EOV	.038 In/Sec	.188 G-S
421	- PUMP	421 (04-Ar	or-23)
		OVERALL LEVEL	– 20 KH7
	MOH	.045 In/Sec	.366 G-S
	MOV	.045 In/Sec	.197 G-s
	MIH	.037 In/Sec	.590 G-s
	мтт	056 TD/Sog	256 C-8
		.030 11/360	.250 G-5
	MIA	.034 In/Sec	.556 G-s
	EIA	.085 In/Sec	.186 G-s
	ЕТН	.063 In/Sec	.582 G-s
	 FTV		206 0 0
	ETA	.048 117 Sec	.200 G-S
	EOH	.033 In/Sec	.431 G-s
	EOV	.047 In/Sec	.213 G-s
		• • • •	
424	- POMP	424 (04-Ag	or-23)
		OVERALL LEVEL	L - 20 KHz
	MOH	.035 In/Sec	.736 G-s
	MON		250 C a
	MOV	.029 11/ Sec	.239 G-S
	MIH	.031 In/Sec	.475 G-s
	MIV	.033 In/Sec	.313 G-s
	мта	030 Tn/Sec	349 C-s
		.030 III/ See	.545 0 5
	EIA	.032 In/Sec	.305 G-S
	EIH	.046 In/Sec	.616 G-s
	EIV	.040 In/Sec	.226 G-s
	FOH	035 Tr/Sec	395 C-e
	2011	.033 IN/Sec	
	EOV	.024 In/Sec	.191 G-s
501	- PUMP	501 (04-Ar	(r-23)
		OVERALL LEVEL	L - 20 KHZ
	MOH	.058 In/Sec	.654 G-s
	MOV	.063 In/Sec	.386 G-s
	мтн	060 Tn/Sec	717 C-s
	NT17		.717 0 5
	MIV	.040 In/Sec	.258 G-S
	MIA	.059 In/Sec	.328 G-s
	EIA	.032 In/Sec	.126 G-s
	<b>FTU</b>	057 Tp/Sog	003 6-6
		.037 11/560	.055 G 3
	EIV	.043 In/Sec	.205 G-s
	EOH	.036 In/Sec	.137 G-s
	EOV	.038 In/Sec	.190 G-s
700	- PUMP	700 (04-Ag	pr-23)
		OVERALL LEVEL	L - 20 KHz
	MOH	.013 In/Sec	.240 G-s
	MOV	026 Tp/Soc	103 6-6
	MOV	.020 11/360	.103 G-S
	MIH	.0067 In/Sec	.294 G-s
	MIV	.011 In/Sec	.090 G-s
	АТМ	012 In/Sec	168 G-s
	 E: T N	0078 Tr/Sec	042 C a
	LIA	.0078 11/560	.042 G-S
	EIH	.0070 In/Sec	.067 G-s
	EIV	.0097 In/Sec	.180 G-s
	FOH	0074 Tn/Sec	089 C-8
		.00/4 IN/Dec	.005 0 5
	EOV	.0094 In/Sec	.050 G-s
702	- PUMP	702 (04-Ar	or-23)
			- 20 889-
	MOH	.0075 In/Sec	.093 G-s
	MOV	.013 In/Sec	.071 G-s
	мін	0061 In/Sec	.182 G-s
	 MTV		029 C -
	MT V	.0090 IN/Sec	.UZO G-S
	MIA	.0074 In/Sec	.034 G-s
	EIA	.0051 In/Sec	.018 G-s
	ЕТН	0055 Tn/Sec	035 6-9
			.055 G-8
			000 0
	EIV	.0076 In/Sec	.029 G-s

		.0039 In/Sec	.029 G-s	
EOV		.0053 In/Sec	.0080 G-s	
604 - P	ump 604	(04	4-Apr-23)	
		OVERALL LEVEL	1 - 20 KHz	
MOH		.029 In/Sec	.277 G-s	
MOV		.044 In/Sec	.089 G-s	
MIH		.033 In/Sec	.627 G-s	
MIV		.061 In/Sec	.372 G-s	
MIA		.035 In/Sec	.589 G-s	
EIA		.054 In/Sec	.117 G-s	
EIH		.072 In/Sec	.248 G-s	
EIV		.040 In/Sec	.145 G-s	
EOH		.033 In/Sec	.231 G-s	
EOV		.027 In/Sec	.081 G-s	
406 - P	VMP 406	(04	4-Apr-23)	
406 - P	20MP 406	04 OVERALL LEVEL	4-Apr-23) 1 - 20 KHz	
406 - р МОН	VUMP 406	04) OVERALL LEVEL .115 In/Sec	4-Apr-23) 1 - 20 KHz .085 G-s	
406 - Р МОН МОV	VMP 406	04) OVERALL LEVEL .115 In/Sec .056 In/Sec	4-Apr-23) 1 - 20 KHz .085 G-s .062 G-s	
406 - Р МОН МОV МІН	UMP 406	04 OVERALL LEVEL .115 In/Sec .056 In/Sec .056 In/Sec	4-Apr-23) 1 - 20 KHz .085 G-s .062 G-s .099 G-s	
406 – Р МОН МОV МІН МIV	UMP 406	04 OVERALL LEVEL .115 In/Sec .056 In/Sec .056 In/Sec .084 In/Sec	4-Apr-23) 1 - 20 KHz .085 G-s .062 G-s .099 G-s .039 G-s	
406 – Р МОН МОV МІН МIV МIA	UMP 406	04 OVERALL LEVEL .115 In/Sec .056 In/Sec .056 In/Sec .084 In/Sec .079 In/Sec	4-Apr-23) 1 - 20 KHz .085 G-s .062 G-s .099 G-s .039 G-s .042 G-s	
406 - P MOH MOV MIH MIV MIA EIA	UMP 406	(04 OVERALL LEVEL .115 In/Sec .056 In/Sec .056 In/Sec .084 In/Sec .079 In/Sec .086 In/Sec	4-Apr-23) 1 - 20 KHz .085 G-s .062 G-s .099 G-s .039 G-s .042 G-s .043 G-s	
406 - P MOH MOV MIH MIV MIA EIA EIH	VUMP 406	(04 OVERALL LEVEL .115 In/Sec .056 In/Sec .056 In/Sec .084 In/Sec .079 In/Sec .086 In/Sec .106 In/Sec	4-Apr-23) 1 - 20 KHz .085 G-s .062 G-s .099 G-s .039 G-s .042 G-s .043 G-s .114 G-s	
406 - P MOH MOV MIH MIV MIA EIA EIH EIV	VUMP 406	(04 OVERALL LEVEL .115 In/Sec .056 In/Sec .056 In/Sec .084 In/Sec .079 In/Sec .086 In/Sec .106 In/Sec .159 In/Sec	4-Apr-23) 1 - 20 KHz .085 G-s .062 G-s .099 G-s .039 G-s .042 G-s .043 G-s .114 G-s .038 G-s	
406 - P MOH MOV MIH MIV MIA EIA EIH EIV	VUMP 406	(04 OVERALL LEVEL .115 In/Sec .056 In/Sec .056 In/Sec .084 In/Sec .079 In/Sec .106 In/Sec .159 In/Sec	4-Apr-23) 1 - 20 KHz .085 G-s .062 G-s .099 G-s .039 G-s .042 G-s .043 G-s .114 G-s .038 G-s	
406 - P MOH MOV MIH MIV MIA EIA EIH EIV	ЮМР 406	(04 OVERALL LEVEL .115 In/Sec .056 In/Sec .056 In/Sec .084 In/Sec .079 In/Sec .086 In/Sec .106 In/Sec .159 In/Sec	4-Apr-23) 1 - 20 KHz .085 G-s .062 G-s .099 G-s .039 G-s .042 G-s .043 G-s .114 G-s .038 G-s	
406 - P MOH MOV MIH MIV MIA EIA EIH EIV Clarification Of	VUMP 406	(04 OVERALL LEVEL .115 In/Sec .056 In/Sec .056 In/Sec .084 In/Sec .079 In/Sec .086 In/Sec .106 In/Sec .159 In/Sec	4-Apr-23) 1 - 20 KHz .085 G-s .062 G-s .099 G-s .039 G-s .042 G-s .043 G-s .114 G-s .038 G-s	
406 - P MOH MOV MIH MIV MIA EIA EIH EIV Clarification Of Acc>	VUMP 406 Vibration Unit G-s RMS	(04 OVERALL LEVEL .115 In/Sec .056 In/Sec .056 In/Sec .084 In/Sec .079 In/Sec .086 In/Sec .106 In/Sec .159 In/Sec	4-Apr-23) 1 - 20 KHz .085 G-s .062 G-s .099 G-s .039 G-s .042 G-s .043 G-s .114 G-s .038 G-s	

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,

\_

Kevin W. Maxwell

ISO Certified Vibration Analyst, Category III



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