

April 22, 2019

Unipres U.S.A. Inc.

## Subject: April vibration service

Most of the machines surveyed were found to be in good condition with the exception of the following:

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.

This completes our assessment of your equipment for this survey. Thank you for your business and don't hesitate to call if you have any comments or questions.

Sincerely,

David W. Shook Service Manager QualiTest® Diagnostics Division of Hi-Speed Industrial Service dshook@gohispeed.com

> 7030 Ryburn Drive Millington, TN 38053 P. 901-873-5300 F. 901-873-5301

## **Observations**

Crane 1 main hoist No issues noted.

## Crane 2 main hoist

A vibration was felt during data collection on the unit when the hook was being lowered. Data (attached below) shows pulsing at near motor shaft speed. This is most likely early signs of wear in the unit. Could be wear in the bearing fits, coupling or drivetrain splines, or even input shaft gear mesh or shaft fits. Inspect the unit within 2 months. **Rated a Class II Defect.** 

Crane 3 main hoist

No issues noted.

Crane 4 main hoist

No issues noted.

## Crane 5 Die Maintenance main hoist

Highest vibration is almost at 0.4"/sec velocity peak measured at the motor inboard axial at shaft speed (1x RPM). Inspect for defects such as loose fasteners, cracked structures and possibly a worn coupling. **Rated a Class II Defect.** 

## Crane 5 Die Maintenance auxiliary hoist

No issues noted.

## 2500T Press drive motor

Perform a Sheave and belt inspection as time allows.

## 3500T Press drive motor

Perform a Sheave and belt inspection as time allows.

**3500T Press cooling fan motor** No issues noted.

Blanking Press drive motor No issues noted.

## **Blanking Press feed unit 1**

Running cycle times too short to collect reliable data and access is difficult.

## Blanking Press feed unit 2

Running cycle times too short to collect reliable data and access is difficult.

## **Blanking Press feed unit 3**

Running cycle times too short to collect reliable data and access is difficult.

## Blanking Press feed HPU unit 4 No issues noted.

#### 3500 Pit HPU South Hydraulic Motor/Pump No issues noted.

3500 Pit HPU North Hydraulic Motor/Pump Not running.

2500 Pit HPU South Hydraulic Motor/Pump No issues noted.

2500 Pit HPU North Hydraulic Motor/Pump Not running.

# Supporting data:





Synchronous pulsing in the acceleration time waveform of the motor drive end bearing axial.



# Crane 5 Die Maintenance Main Hoist

Hoist vibration data is dominated by motor input speed (1x RPM) at the motor inboard axial as shown in the unit peak velocity spectra waterfall.

#### Abbreviated Last Measurement Summary

Database: UNIPRES.rbm Area: UNIPRES Route No. 1: UNIPRES Report Date: 05-Aug-20 07:41

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD
CRANE1MAIN - CRANE 1 MAIN HOIST	(31-Jul-20)	
	OVERALL LEVEL	1-20KHZ
MOH - MOTOR OUTBOARD HZ	.096 In/Sec	.104 G-s
MOV - MOTOR OUTBOARD VERT	.033 In/Sec	.361 G-s
MIV - MOTOR INBOARD VERT	.032 In/Sec	.168 G-s
MIH - MOTOR INBOARD HZ	.016 In/Sec	.140 G-s
MIA - MOTOR INBOARD AXIAL	.017 In/Sec	.248 G-s
GIA - GEARBOX INPUT SHAFT 1 AXIAL	.021 In/Sec	.250 G-s
GIH - GEARBOX INPUT SHAFT 1 HZ	.017 In/Sec	.062 G-s
GIV - GEARBOX INPUT SHAFT 1 VERTICAL	.019 In/Sec	.112 G-s
G01 - GEARBOX SHAFT 1 OUTPUT SIDE	.016 In/Sec	.096 G-s
CRAIN2MAIN - CRANE 2 MAIN HOIST	(31-Jul-20)	
	OVERALL LEVEL	1-20KHZ
MOH - MOTOR OUTBOARD HZ	.069 In/Sec	.047 G-s
MOV - MOTOR OUTBOARD VERT	.101 In/Sec	.049 G-s
GIA - GEARBOX INPUT SHAFT 1 AXIAL	.042 In/Sec	.165 G-s
GIH - GEARBOX INPUT SHAFT 1 HZ	.030 In/Sec	.079 G-s
GIV - GEARBOX INPUT SHAFT 1 VERTICAL	.054 In/Sec	.099 G-s
G01 - GEARBOX SHAFT 1 OUTPUT SIDE	.021 In/Sec	.065 G-s
G02 - GEARBOX SHAFT 2 OUTPUT SIDE	.013 In/Sec	.052 G-s
CRAIN3MAIN - CRANE 3 MAIN HOIST	(31-Jul-20)	
	OVERALL LEVEL	1-20KHZ
MOH - MOTOR OUTBOARD HZ	.037 In/Sec	.0082 G-s
MOV - MOTOR OUTBOARD VERT	.027 In/Sec	.085 G-s
GIA - GEARBOX INPUT SHAFT 1 AXIAL	.034 In/Sec	.042 G-s
GIH - GEARBOX INPUT SHAFT 1 HZ	.022 In/Sec	.047 G-s
GIV - GEARBOX INPUT SHAFT 1 VERTICAL	.019 In/Sec	.194 G-s
G01 - GEARBOX SHAFT 1 OUTPUT SIDE	.023 In/Sec	.067 G-s
G02 - GEARBOX SHAFT 2 OUTPUT SIDE	.079 In/Sec	.020 G-s
CRAIN4MAIN - CRANE 4 MAIN HOIST	(31-Jul-20)	
	OVERALL LEVEL	1-20KHZ
MOH - MOTOR OUTBOARD HZ	.049 In/Sec	.020 G-s
MOV - MOTOR OUTBOARD VERT	.034 In/Sec	.050 G-s
GIA - GEARBOX INPUT SHAFT 1 AXIAL	.028 In/Sec	.141 G-s
GIH - GEARBOX INPUT SHAFT 1 HZ	.041 In/Sec	.165 G-s
GIV - GEARBOX INPUT SHAFT 1 VERTICAL	.033 In/Sec	.079 G-s
G01 - GEARBOX SHAFT 1 OUTPUT SIDE	.026 In/Sec	.163 G-s
G02 - GEARBOX SHAFT 2 OUTPUT SIDE	.020 In/Sec	.213 G-s
CRAIN5MAIN - CRANE 5 DIE MAINTENANCE MAIN	HOIST	(31-Jul-20)
	OVERALL LEVEL	1-20KHZ
MIH - MOTOR INBOARD HZ	.315 In/Sec	.535 G-s

MIA - MOTOR INBOARD AXIAL	.376 In/Sec	.212 G-s
GIA - GEARBOX INPUT SHAFT 1 AXIAL	.344 In/Sec	.400 G-s
GIH - GEARBOX INPUT SHAFT 1 HZ	115 In/Sec	.703 G-s
GIV - GEARBOX INDIT SHAFT 1 VERTICAL	215 In/Sec	280 G-s
	.215 11,500	.200 0 5
CRAINGMAIN - CRANE 5 DIE MAINTENANCE AL	UN HOTST	(31 - 711 - 20)
CRAINOMAIN - CRANE 5 DIE MAINIENANCE A		(JI-001-20)
CTA CEARDON INDUM CHARM 1 AVIAL	112 Tr /Co.	1-20KHZ
GIA - GEARBOX INPUT SHAFT I AXIAL	.113 In/Sec	.023 G-S
GIH - GEARBOX INPUT SHAFT I HZ	.05/ In/Sec	.086 G-s
GIV - GEARBOX INPUT SHAFT 1 VERTICAL	.060 In/Sec	.097 G-s
P1DRVMOTOR - 2500T PRESS DRIVE MOTOR	(31-Jul-20)	
	OVERALL LEVEL	1-20KHZ
MOH - MOTOR OUTBOARD HORIZONTAL	.022 In/Sec	.030 G-s
MIH - MOTOR INBOARD HORIZONTAL	.015 In/Sec	.058 G-s
MIA - MOTOR INBOARD AXIAL	.051 In/Sec	.073 G-s
P2DRVMOTOR - 3500T PRESS DRIVE MOTOR	(31 - Ju1 - 20)	
	OVERALL LEVEL	1-20KHZ
		048 6-6
MOH - MOTOR OUTBOARD HORIZONTAL	.020 11/300	.040 G-S
MIH - MOTOR INBOARD HORIZONTAL	.018 In/Sec	.132 G-S
MIA - MOTOR INBOARD AXIAL	.051 In/Sec	.2/0 G-s
JA – JACKSHAFT AXIAL	.018 In/Sec	.0074 G-s
JIH - JACKSHAFT INBOARD HORIZONTAL	.021 In/Sec	.021 G-s
JOH - JACKSHAFT OUTBOARD HORIZONTAL	.018 In/Sec	.021 G-s
P2BLWMOTOR - 3500T PRESS BLOWER MOTOR	(31-Jul-20)	
	OVERALL LEVEL	1-20KHZ
MOH - MOTOR OUTBOARD HORIZONTAL	.055 In/Sec	.031 G-s
MIH - MOTOR INBOARD HORIZONTAL	.062 In/Sec	.082 G-s
MIA - MOTOR INBOARD AXIAL	.062 In/Sec	.030 G-s
P3DRVMOTOR - BLANKING PRESS DRIVE MOTOR	(31-Jul-20)	
	OVERALL LEVEL	1-20KHZ
MOH - MOTOR OUTBOARD HORTZONTAL		314 G-e
MUL - MOTOR TUROARD HORIZONIAL	.024 IN/Sec	.514 G S
MIN - MOTOR INBOARD HORIZONIAL	.029 III/Sec	.505 G-S
MIA - MOTOR INBOARD AXIAL	.023 In/Sec	.206 G-S
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BRPRDRMTRI - BLANK PRESS FEED UNIT I	(31-Ju1-20)	1 00
	OVERALL LEVEL	1-ZUKHZ
MOH - MOTOR OUTBOARD HORIZONTAL	.019 In/Sec	.163 G-s
MIH - MOTOR INBOARD HORIZONTAL	.025 In/Sec	.113 G-s
MIA - MOTOR INBOARD AXIAL	.059 In/Sec	.018 G-s
EIH - EQUIPMENT INBOARD HORIZONTAL	.051 In/Sec	.154 G-s
EOH - EQUIPMENT OUTBOARD HORIZONTAL	.053 In/Sec	.166 G-s
BKPRDRMTR4 - BLANK PRESS FEED HPU UNIT	4 (31-Jul-20)	
	OVERALL LEVEL	1-20KHZ
MOH - MOTOR OUTBOARD HORIZONTAL	.057 In/Sec	.391 G-s
MIH - MOTOR INBOARD HORIZONTAL	.080 In/Sec	.095 G-s
MTA - MOTOR INBOARD AXIAI.	168 Tn/Sec	140 6-9
$\mathbf{F} = \mathbf{F} \cap \mathbf{I} \mathbf{I} \mathbf{I} \mathbf{I} \mathbf{I} \mathbf{I} \mathbf{I} \mathbf{I}$	1/3  Tr/3-2	551 0
EA - EQUIPMENT AAIAL	.143 IN/SEC	.551 G-S
EIH - EQUIPMENT INBOARD HORIZONTAL	.0/3 In/Sec	.526 G-S
EOH - EQUIPMENT OUTBOARD HORIZONTAL	.1/3 In/Sec	.557 G-s
SOUPSHMOT - SOU PIT SOUTH HYD MOTOR	(31-Ju1-20)	
	OVERALL LEVEL	1-20KHZ

MOH - MOTOR OUTBOARD HORIZONTAL	.021 In/Sec	.129 G-s
MIH - MOTOR INBOARD HORIZONTAL	.031 In/Sec	.166 G-s
MIA - MOTOR INBOARD AXIAL	.021 In/Sec	.253 G-s
EIH - EQUIPMENT INBOARD HORIZONTAL	.041 In/Sec	.397 G-s
EOH - EQUIPMENT OUTBOARD HORIZONTAL	.045 In/Sec	.607 G-s
2500PSHMOT - 2500 PIT SOUTH HYD MOTOR	(31-Jul-20)	
	OVERALL LEVEL	1-20KHZ
MOH - MOTOR OUTBOARD HORIZONTAL	.070 In/Sec	.018 G-s
MIH - MOTOR INBOARD HORIZONTAL	.042 In/Sec	.045 G-s
MIA - MOTOR INBOARD AXIAL	.077 In/Sec	.078 G-s
EA - EQUIPMENT AXIAL	.111 In/Sec	.172 G-s
EIH - EQUIPMENT INBOARD HORIZONTAL	.163 In/Sec	.295 G-s
EOH - EQUIPMENT OUTBOARD HORIZONTAL	.105 In/Sec	.656 G-s

Clarification Of Vibration Units: Acc --> G-s RMS Vel --> In/Sec PK