



# **Chiller Vibration Report**

**Jobsite: University of Minnesota**

**Location: Minneapolis, MN.**

**Unit Tested**

**Tag# CHL-2 MN CVHE1120 SN L93B01539**

**Prepared For**

**New Mech Companies Inc.**

**January 23, 2008**

# Chiller Report

Jobsite: U of M

Location: Minneapolis, MN.

Report Date: January 23, 2008

Type: Centrifugal

Operating RPM: 3595

Line Frequency: 60 Hz

Run Hours: 26,000

# Starts: 1,303

Load: 15% (air run)



## Chiller Condition:

The balance on this chiller went well. There was a 40-degree shift each time we started up the chiller. We also noted that the vibration for the reference run increased after the shaft had warmed up. New weights had to be shifted slightly to get a lower level on chiller (see balance report).

## Recommendation:


**I recommend checking this chiller after 500 additional run hours and repeat at each additional 500 run hours for at least the first summer of operation.**

**Continue to watch for changes in the amplitude levels and content of the vibration spectrums and monitor the vibration at least twice per season.**

*Patrick J. Nichols*

Analyst: \_\_\_\_\_

Status:  Slight

 **Extreme:** Chiller should not be operated; one or more significant faults were noted in vibration readings.

 **Serious:** Chiller has significant energy that appears to have faults that are continuing to increase. Take readings more often so faults levels can be monitored closely.

 **Moderate:** Chiller has levels that are high enough that additional readings should be collected to understand the nature of the present levels.

 **Slight:** Chiller has some minor indications of raised levels. Continue to monitor for changes in content and amplitude.

 **OK:** Chiller has no faults. Continue to monitor for changes in content and amplitude.

# Balancing Report

Folder: New Mech - 2008 - U of M  
Machine: CH-2  
Date/Time: 1/22/2008 10:23:18 AM  
Machine Speed: 3594 RPM / 59.90 Hz

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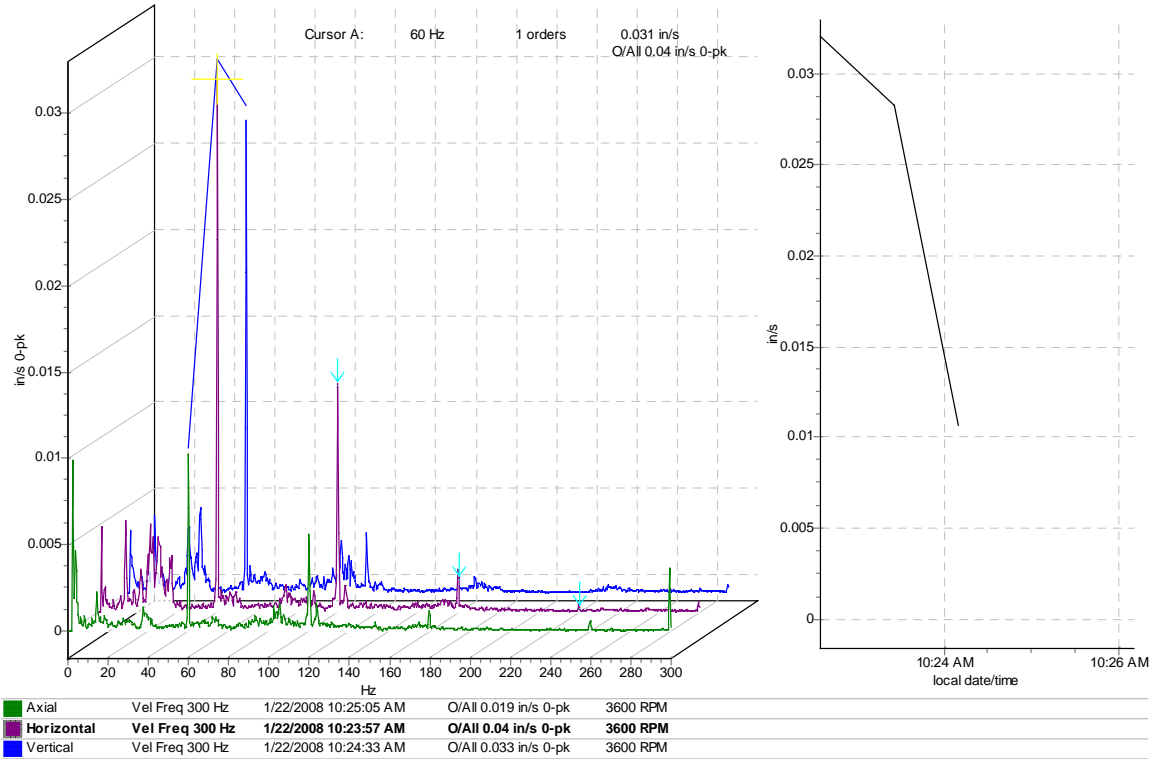
Single Plane Balance, Velocity (in/s 0-pk)  
Trial Weights Removed  
Angles measured / Weight locations counted: Against Rotation (ar)  
Weight Locations: 12  
Normal Filter Bandwidth (+/- 150 RPM)

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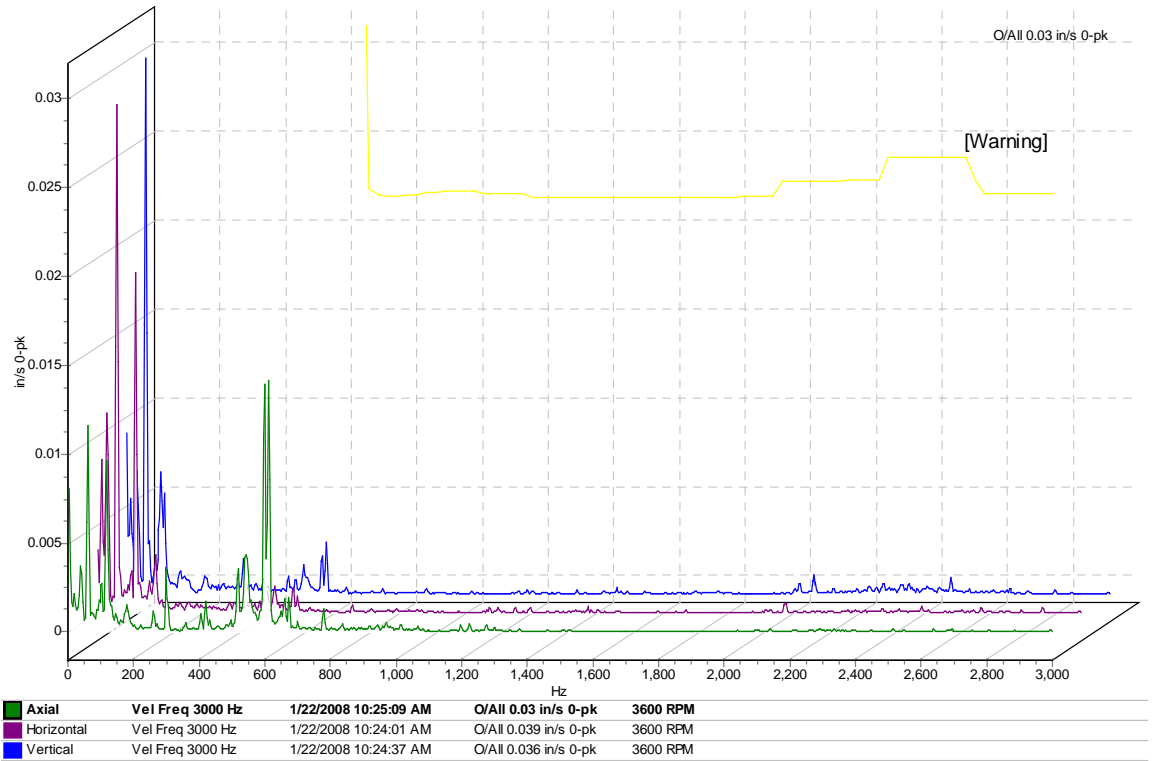
	Magnitude/ Mass	Angle
<b>Initial Reading</b>	<b>0.089 in/s 0-pk</b>	<b>8 deg</b>
<b>Trial Reading</b>		
Weight	16.90	240 deg (#9)
Reading	<b>0.061 in/s 0-pk</b>	<b>295 deg</b>
<b>Primary Balance</b>		
Add	5.12	#7
	11.73	#8
Remove	(5.12)	#1
	(11.73)	#2
Reading	<b>0.044 in/s 0-pk</b>	<b>34 deg</b>
<b>Trim Balance #1</b>		
Add	3.65	#8
	4.75	#9
Remove	(3.65)	#2
	(4.75)	#3
<b>Final Reading</b>	<b>0.03 in/s 0-pk</b>	<b>4 deg</b>

The final balance readings were very good. We noted a 40 degree shift during the 8 minute readings and higher levels as the shaft warmed up on a redo of the reference run.

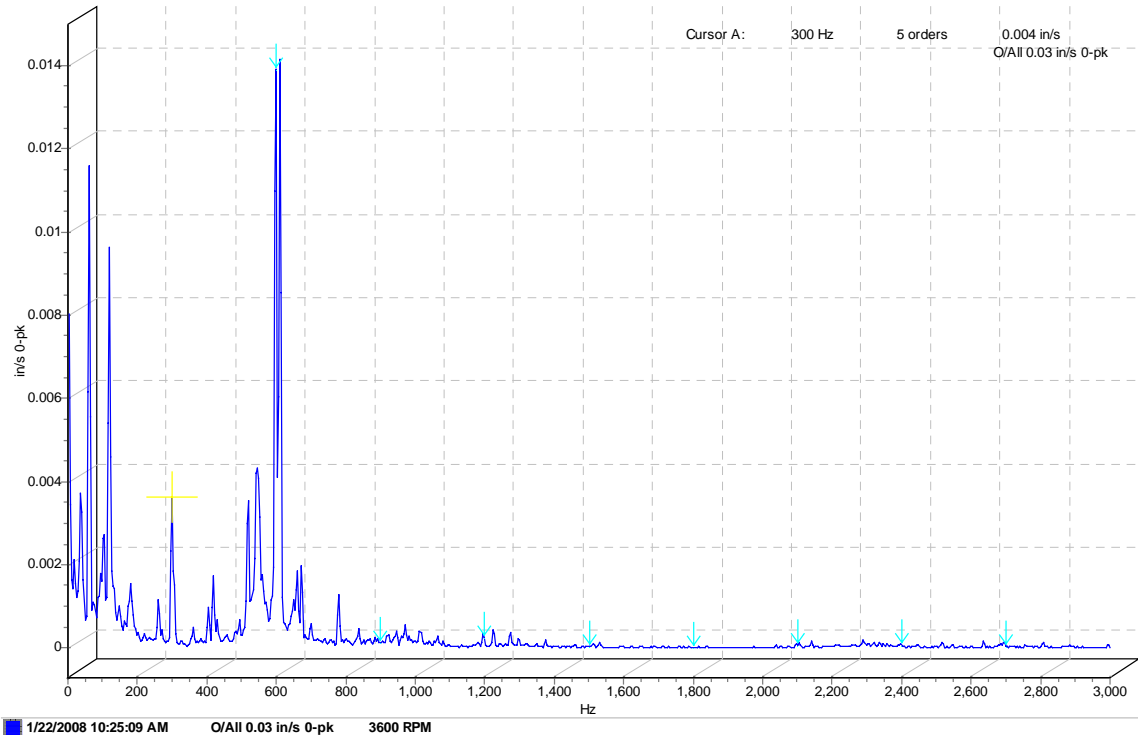
### CH-2 - Motor Outboard



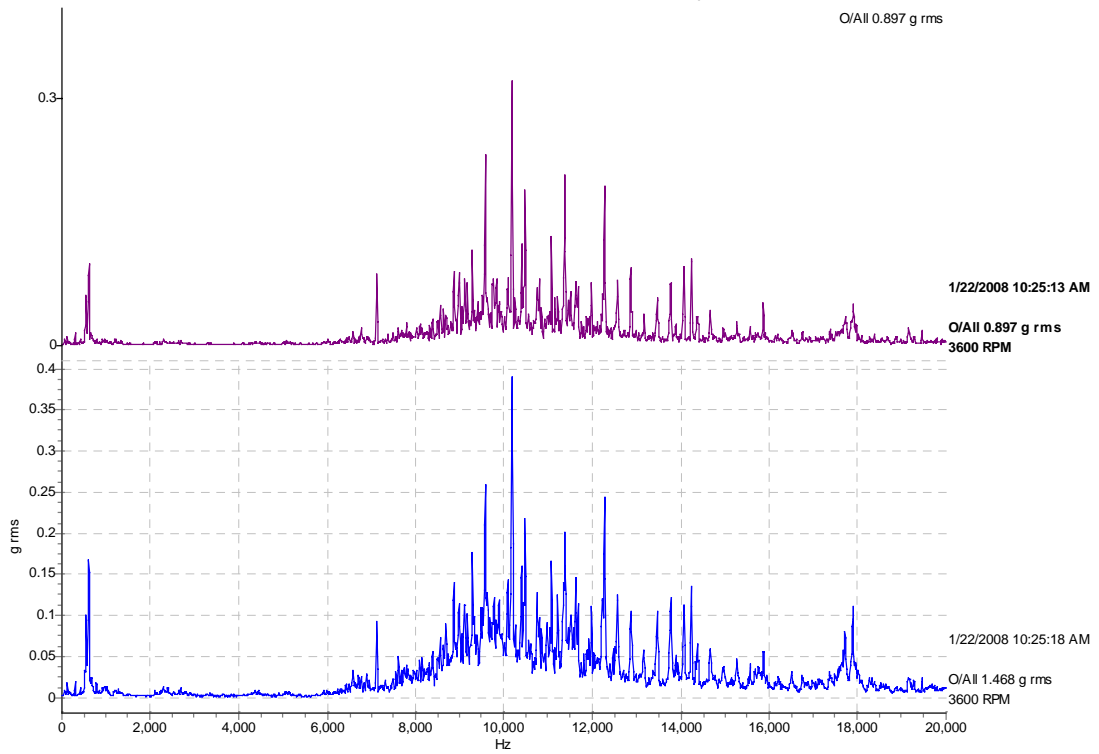
### CH-2 - Motor Outboard



CH-2 - Motor Outboard - Axial - Vel Freq 3000 Hz  
1/22/2008 10:25:09 AM



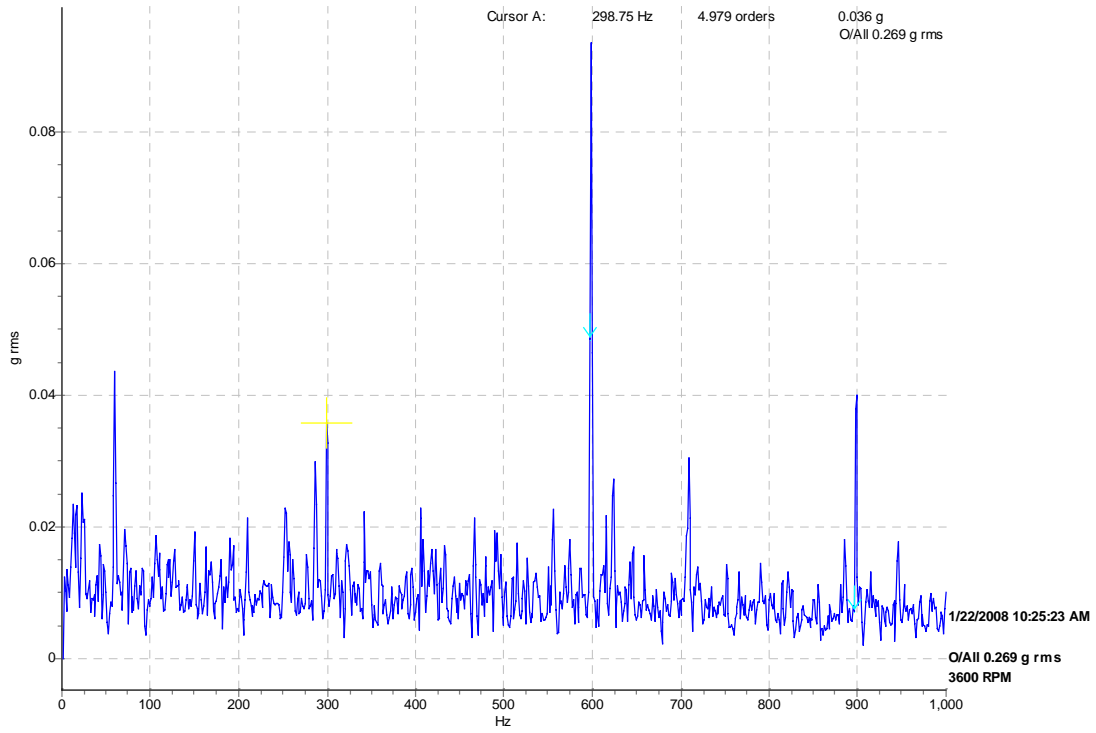
CH-2 - Motor Outboard - Axial - Acc Freq 20000 Hz



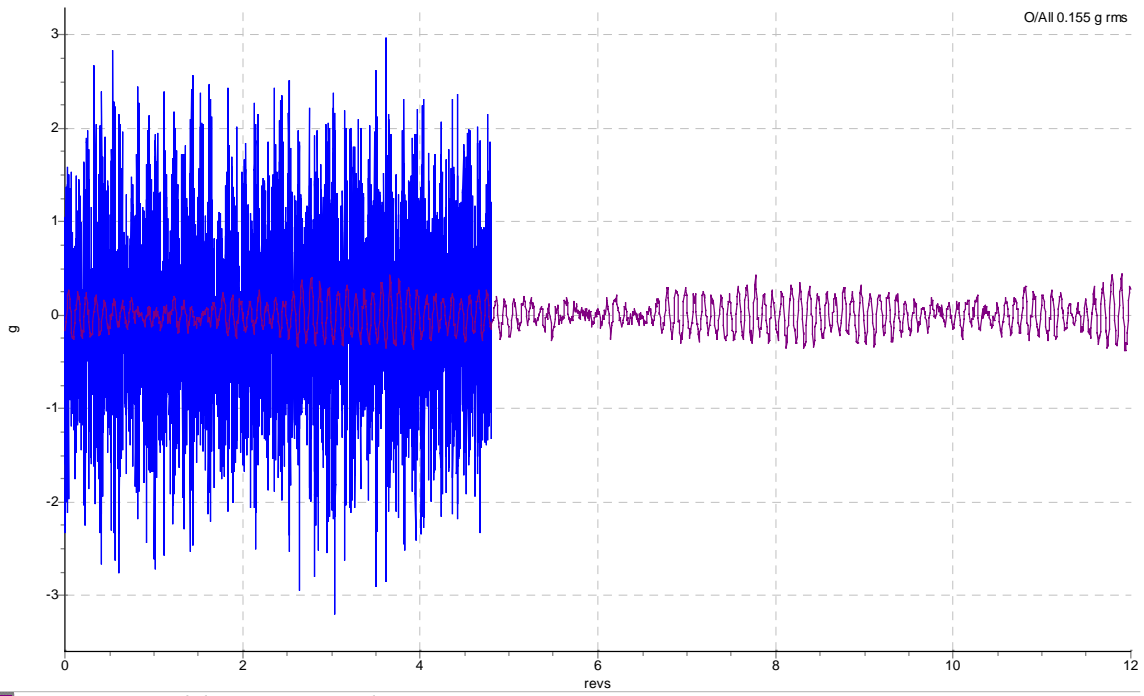
CH-2 - Motor Outboard - Axial - Demod (2-10kHz) 1000 Hz  
1/22/2008 9:07:02 AM



CH-2 - Motor Outboard - Axial - Demod (2-10kHz) 1000 Hz  
1/22/2008 10:25:23 AM



CH-2 - Motor Outboard - Axial



**The nominal higher frequency waveform is 2 G pk and 1 G pk for the lower frequency waveform.**