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Digital Diagnostics Report

Vibration Analysis Survey

Prepared for:

Customer

Prepared by:
Travis Beattie, Level II Vibration Analyst

Date Prepared:
February 22, 2013

Survey Date
February 18-20, 2013

Travis Beattie
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February 22, 2013

Re: Vibration Analysis Report

Sir,

Please find the following report from the Predictive Maintenance Services performed on February 18-20, 2013. The following pages contain a summary of the machinery analyzed followed by diagnosis pages for identified problems.

Thank you, for choosing Electrical Equipment Company. If there are any further questions or concerns please contact me at 804-219-0130.

Sincerely,

J. Travis Beattie

Travis Beattie
Level II Vibration Analyst & Thermographer

CC: Ken Bottenfield
Mike Rathbun

Equipment Summary

SEVERITY RATINGS

NONE (>) The equipment should be operated as normal, with confidence. There are no indications of failure.

LOW The equipment should be operated as normal, with confidence. There are indications/conditions that are evident but not critical.

MEDIUM The equipment may be operated/operable, but should be monitored closely. There are issues that will effect performance/reliability. The item will need maintenance soon.

HIGH The equipment should not be operated to prevent the risk of extensive damage or catastrophic failure.

Equipment	Problem Area	Severity
Draw Machine 1 (M)		>
DM 1Feed Module		>
DM1 Draw Module	Possible Gear backlash or wear	MEDIUM
DM 1 Crimper Gearbox		>
DM 1 Crimper P/Roll Gearbox		>
Draw Machine 2 (M)		
DM2 Feed Module		>
DM2 Draw Module		>
DM 2 Crimper Gearbox		>
DM 2 Crimper P/Roll Gearbox	Gearbox looseness	HIGH
Draw Machine 3 (M)		
DM 3 Pre Feed Module		>
DM 3 Feed Module		>
DM 3 Draw 1A Module		>
DM 3 Draw 1B Module		>
DM 3 Puller 2 Module		>
DM 3 Draw Cooler		>

Equipment Summary

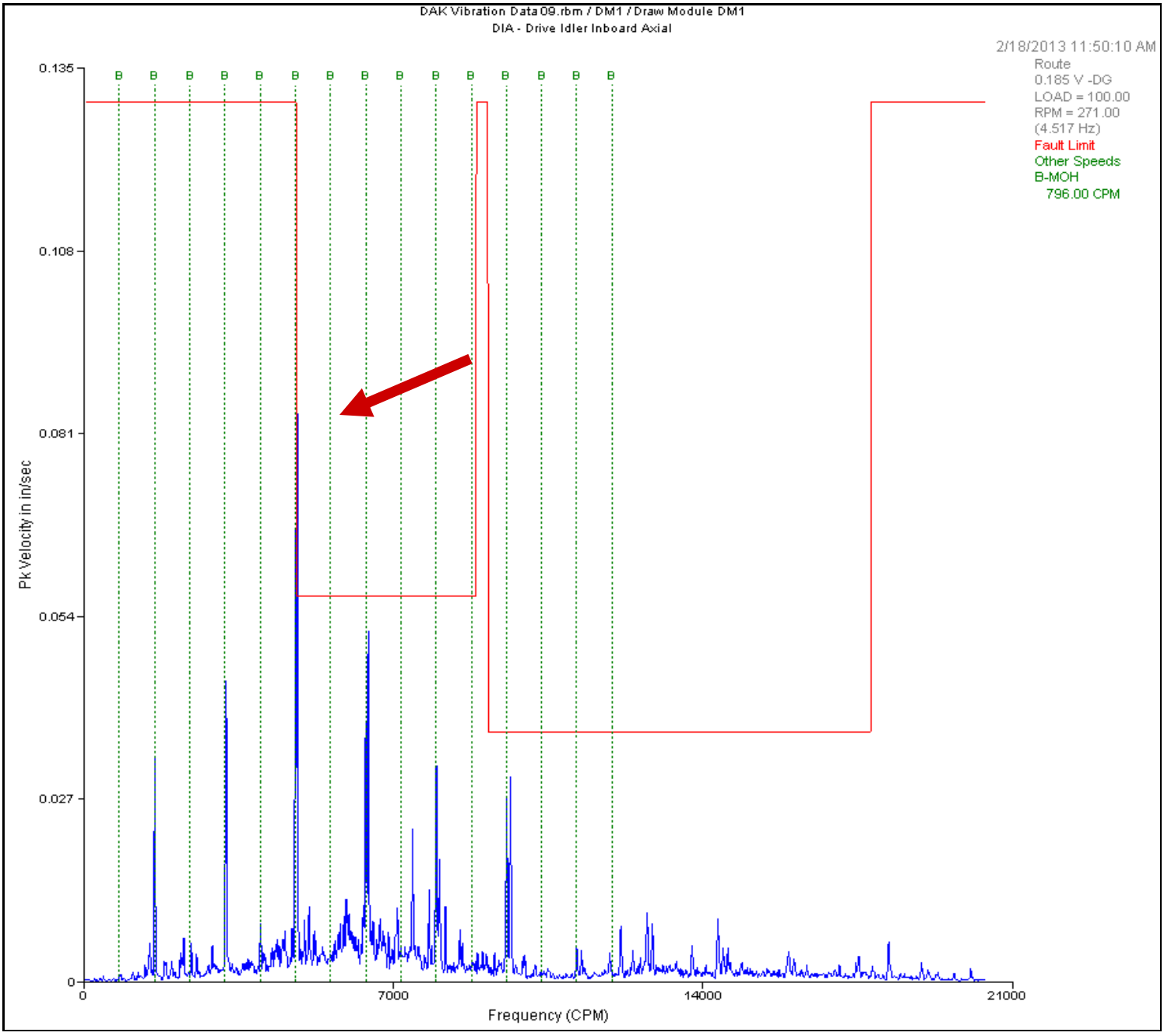
Equipment	Problem Area	Severity
DM 3 Draw 2 Module		>
DM 3 Puller Cooler		>
DM 3 Drum Dryer Fan 1		>
DM 3 Drum Dryer Fan 2		>
DM 3 Drum Dryer Fan 3		>
DM 3 Drum Dryer Fan 4		>
DM 3 Drum Dryer Fan 5		>
DM 3 Drum Dryer Fan 6	Fan imbalance and or looseness	LOW
DM 3 Drum Dryer Fan 7	Fan imbalance and or looseness	LOW
DM 3 Drum Dryer Fan 8	Fan imbalance and or looseness	LOW
DM 3 Drum Dryer Fan 9		>
DM 3 Crimper Motor/Gearbox		>
Draw Machine 4 (M)		
DM 4 Pre Feed Module		>
DM 4 Feed Module		>
DM 4 Draw 1A Module		>
DM 4 Draw 1B Module		>
DM 4 Draw 2 Module		>
DM 4 Puller Cooler		>
DM 4 Drum Dryer Fan 1		>
DM 4 Drum Dryer Fan 2		>
DM 4 Drum Dryer Fan 3		>
DM 4 Drum Dryer Fan 4		>
DM 4 Drum Dryer Fan 5		>
DM 4 Drum Dryer Fan 6		>
DM 4 Drum Dryer Fan 7		>

Exceptions Detailed Analysis

Company:
Equipment: DM1 Draw Module Drive Idler
Type: Gear Driven Rolls

Severity: MEDIUM
Fault: gear
Survey: 2/18/2013

Explanation: Possible gear backlash/wear/looseness Need to check it unloaded with no rope in rolls to see if there isn't a drive issue.

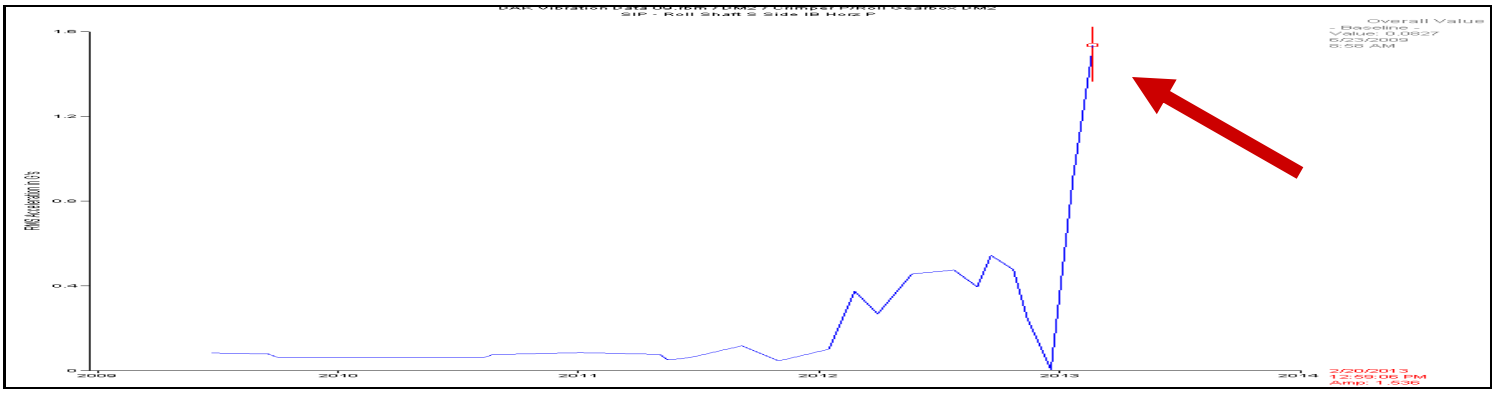


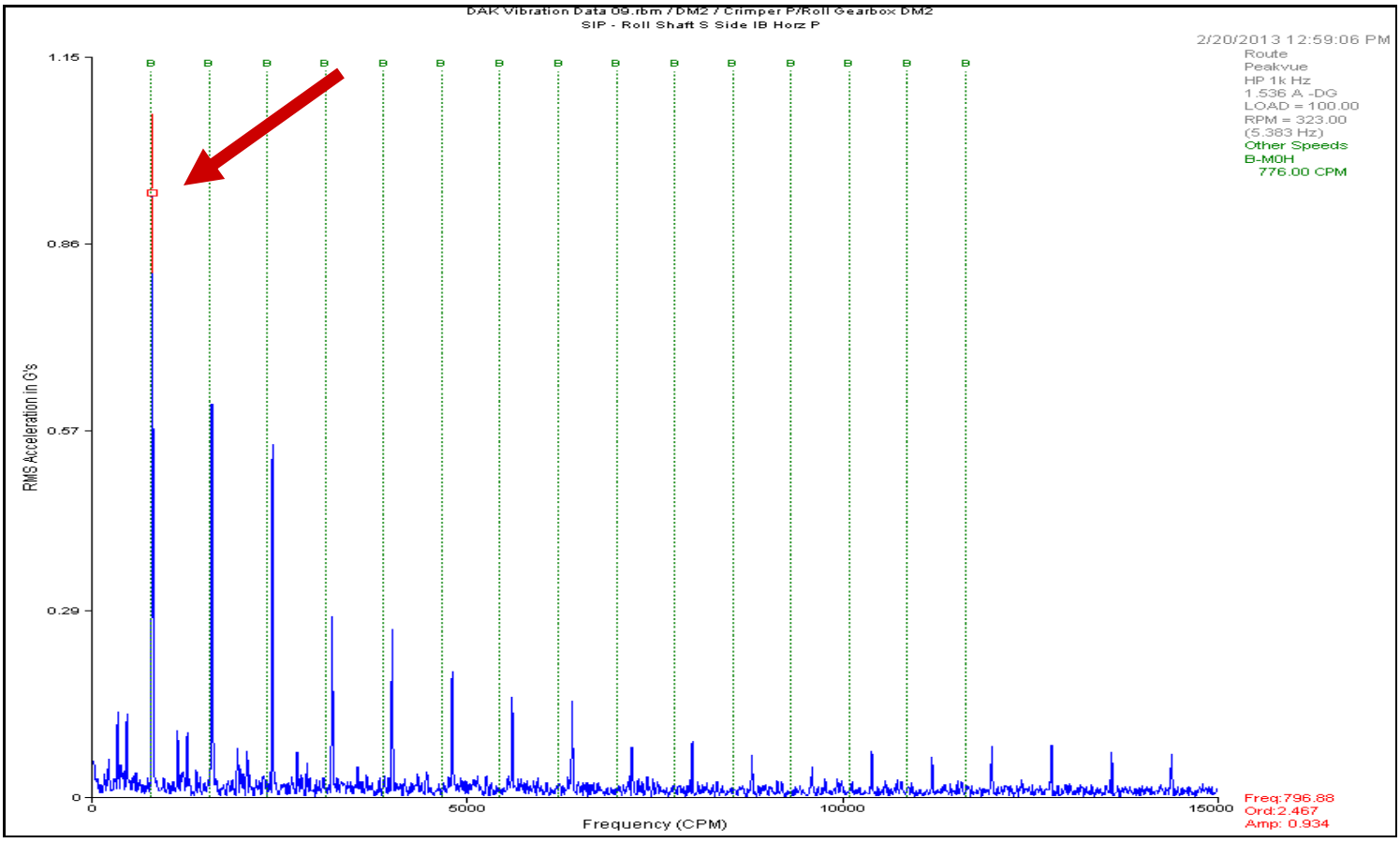
Exceptions Detailed Analysis

Company:
Equipment: DM2 Crimper P/Roll Gearbox
Type: Gear Driven Rolls

Severity: HIGH
Fault: looseness
Survey: 2/20/2013

Explanation: Acceleration has risen significantly in past two months accompanied with louder knocking. Looks like intermediate gear is loose on shaft. Starting to see higher vi-





Exceptions Detailed Analysis

Company:
Equipment: DM3 Drum Dryer Fan 6
Type: Belt Driven Blower

Severity: LOW
Fault: Frame
Survey: 2/19/2013

Explanation: Sub harmonics of fan speed indicating looseness of mounting system. Need to check all mounting bolts of this fan frame and mounting bolts of motor