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BASKIN ENGINEERING
2ND FLOOR
FOR CLEAN ROOM
SITING

Site Survey Report Vibration, AC EMI, and Acoustics Measurements

UCSC

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Prepared for

UCSC

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1.0 Introduction

The purpose of this measurement survey was to determine the floor vibration, ac EMI, and acoustic levels where a clean room is proposed to be located in the Applied Sciences Building. Seven locations were measured for vibration, and one each location for EMI and Acoustics.

2.0 Instrumentation

The instrumentation utilized to conduct the testing is itemized below:

Spectrum Analyzer:	Data Physics ACE DP-104
Accelerometer:	Wilcoxon 731 seismic accelerometer, Serial Number 791, 100 Volt per G.
EMI coil:	MSI Magcheck 95, 1.0 millivolt per milligauss
Microphone:	RS 33-2050

All instrumentation and the spectrum analyzer are currently calibrated with documentation in place traceable to the National Institute of Standards and Technology.

The analyzer has a low range sensitivity to -130 DB referenced to 1 volt.

3.0 Test Procedures

Vibration measurements were made on the floor in three directions at eight locations as shown in the included map. The EMI and sound pressure measurements were made approximately four feet above the floor.

The 1/3 octave velocity measurements were first made at a bandwidth of 250 hertz. Power spectra functions of velocity are produced from the acceleration measurements by integration..

The RMS EMI measurements were performed at a bandwidth of 625 hertz. Power spectra functions of EMI in three directions were recorded on disk for later processing and plotting.

The RMS acoustic levels were measured with a calibrated microphone and the dBA and dBC levels were recorded and reported for each site.

All measurements were recorded on the internal disk of the analyzer for later processing. Measurements were taken under normal operating conditions.

4.0 Conclusions

1. Vibration: The vibration is below 500 uinch/second for most locations which indicates that the floor is adequate for the intended clean room. In some locations the level is slightly exceeded. This can be corrected, if necessary, by isolating the rotating piece of equipment causing the problem.

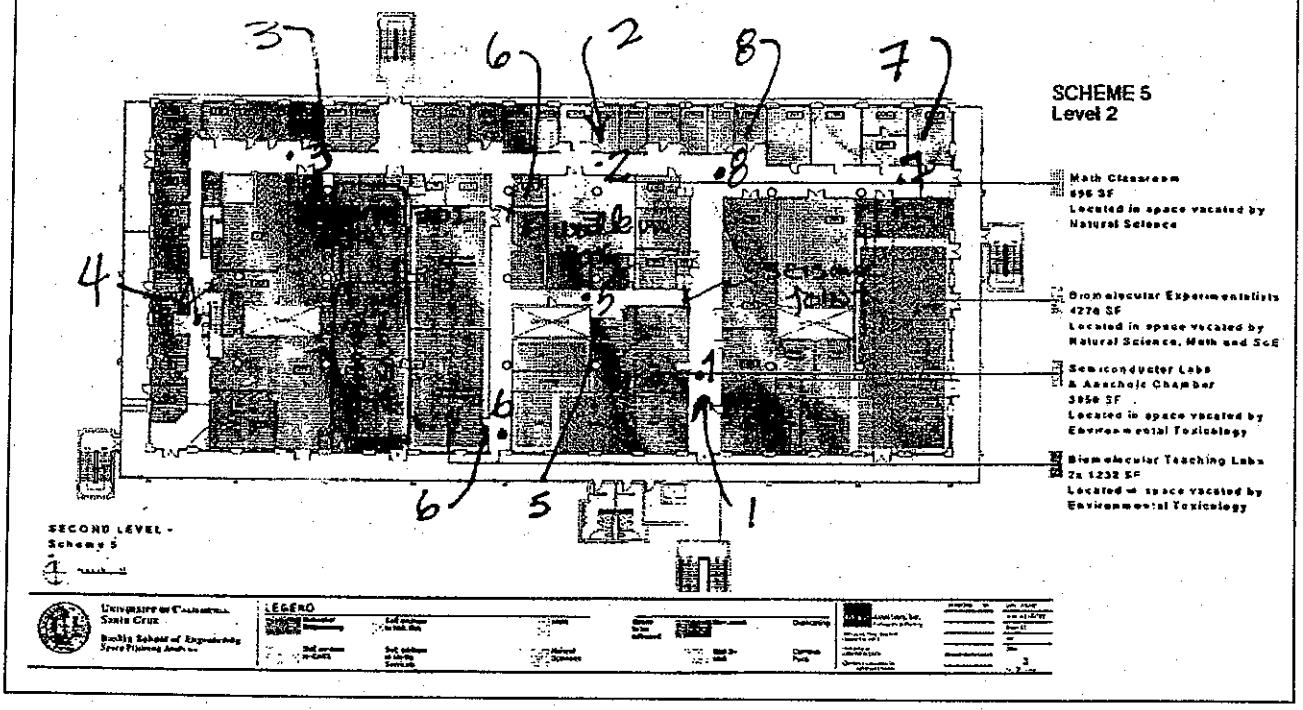
Environmental Requirements

500 Microinches/Second rms, 1/3 octave

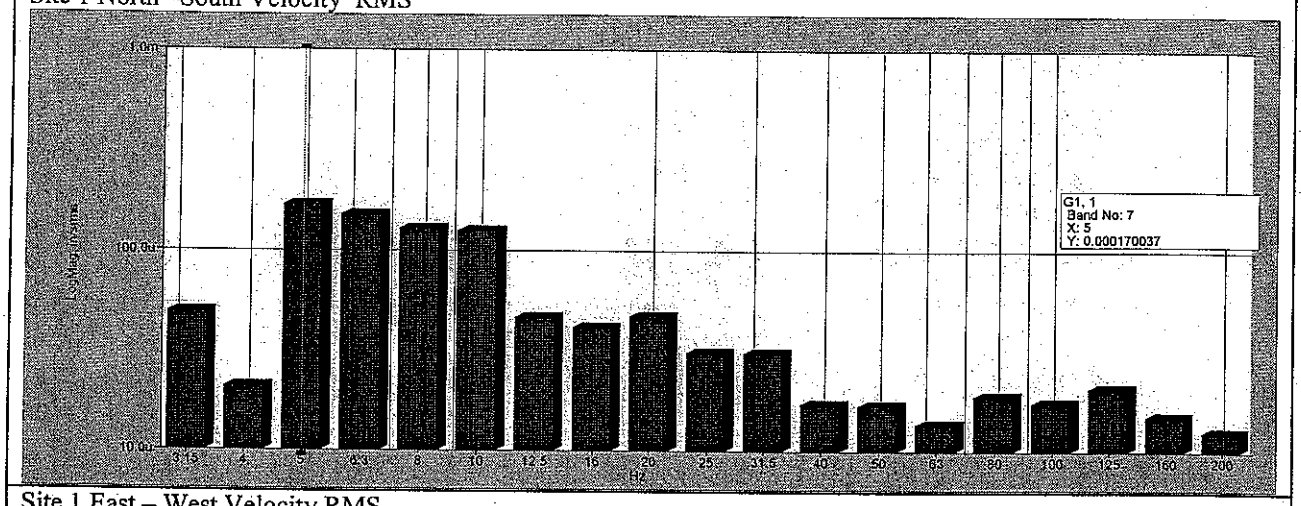
No EMI problems were detected.

The acoustic level is good. Care must be taken to control the acoustic level of the HEPA air system.

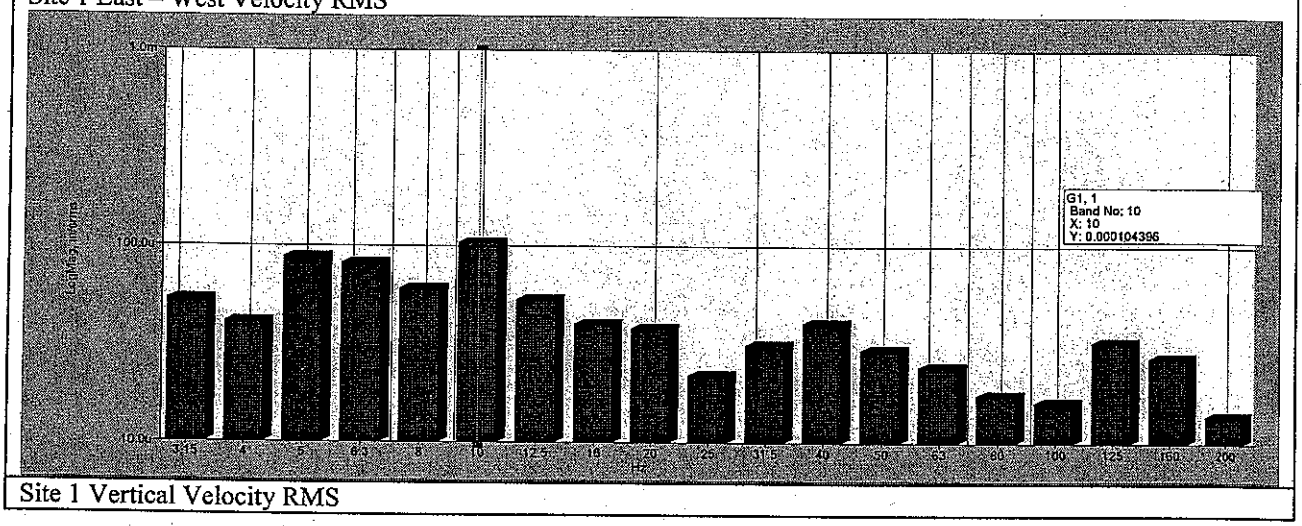
Test Measurement Layout



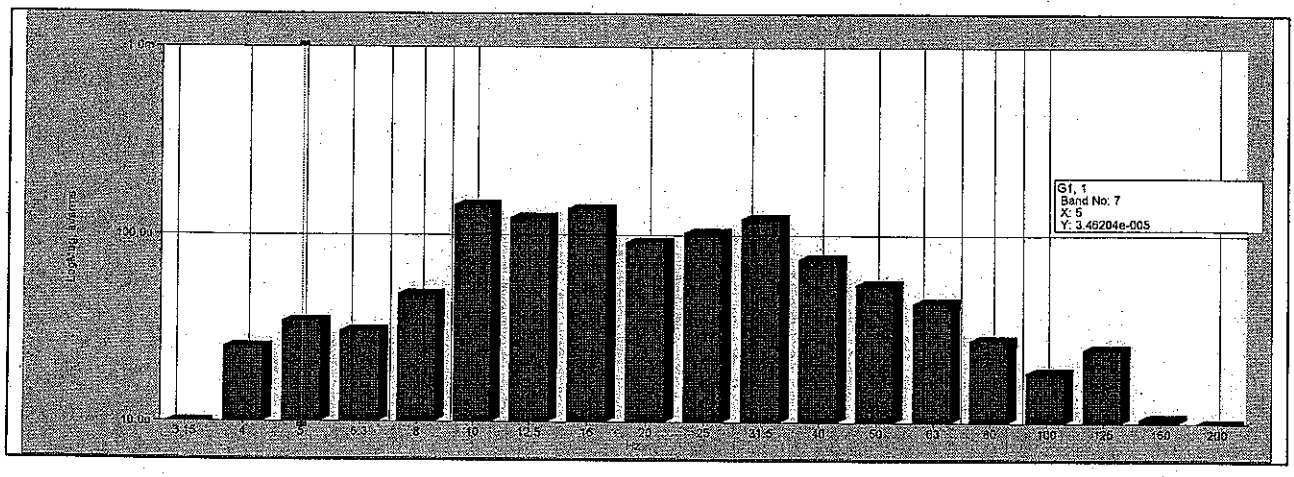
Site 1 North –South Velocity RMS



Site 1 East – West Velocity RMS



Site 1 Vertical Velocity RMS


Gf, 1
Band No: 7
X: 5
Y: 3.46204e-005

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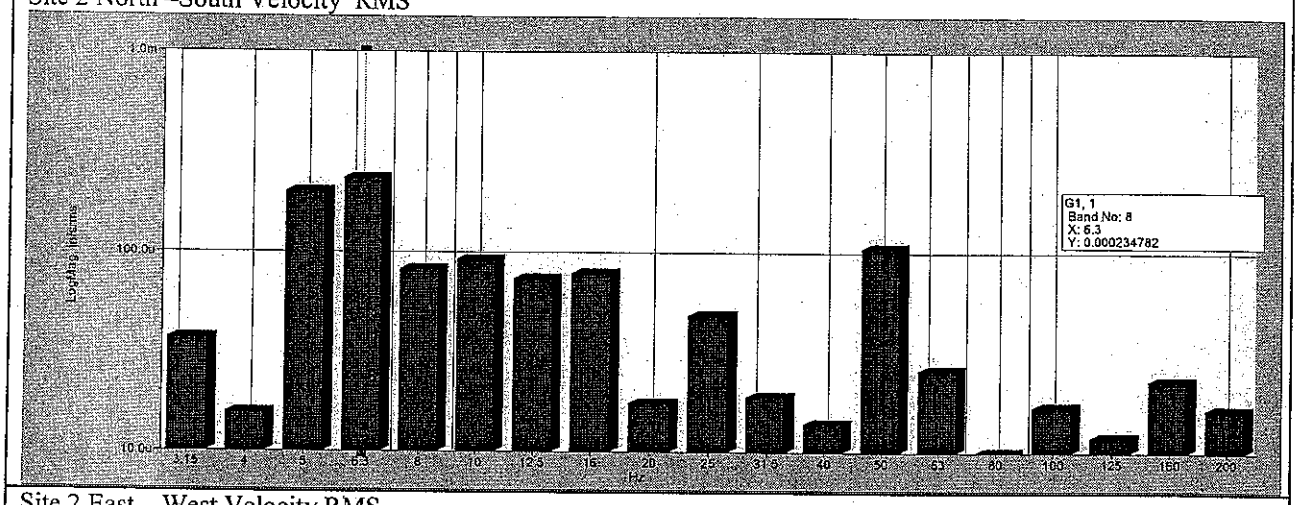
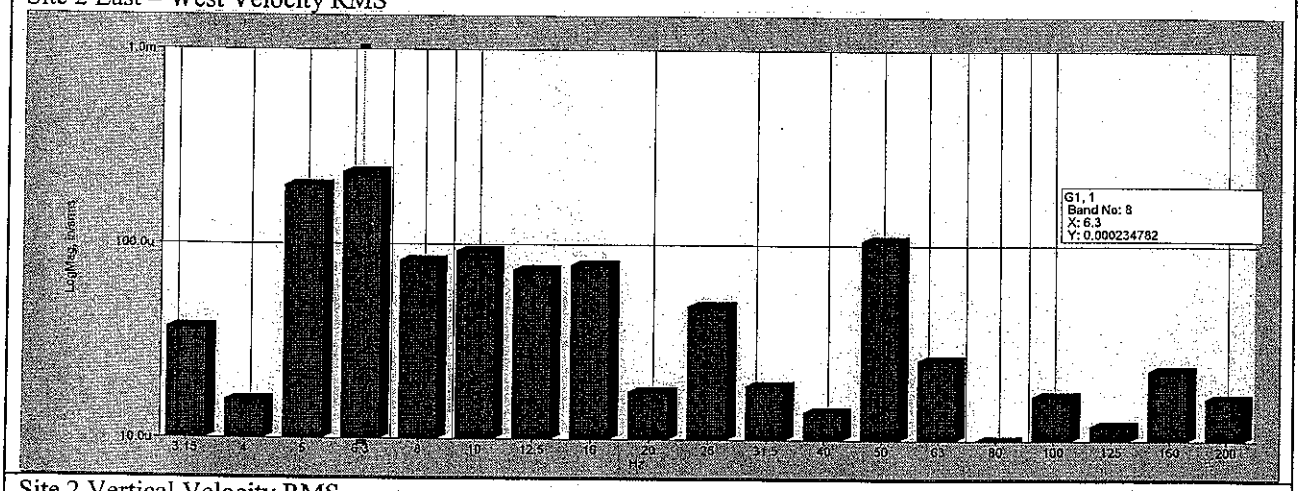
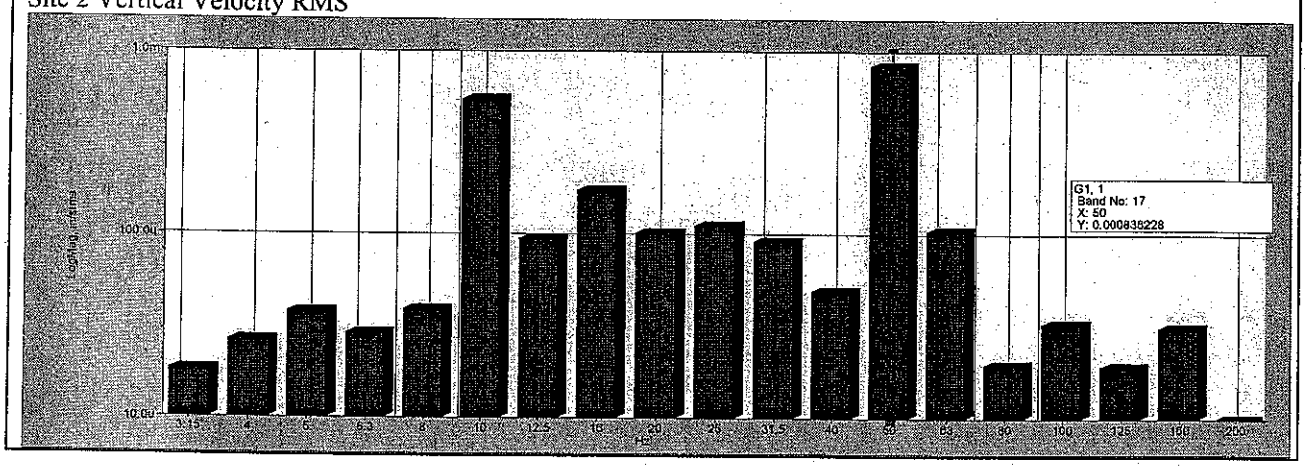


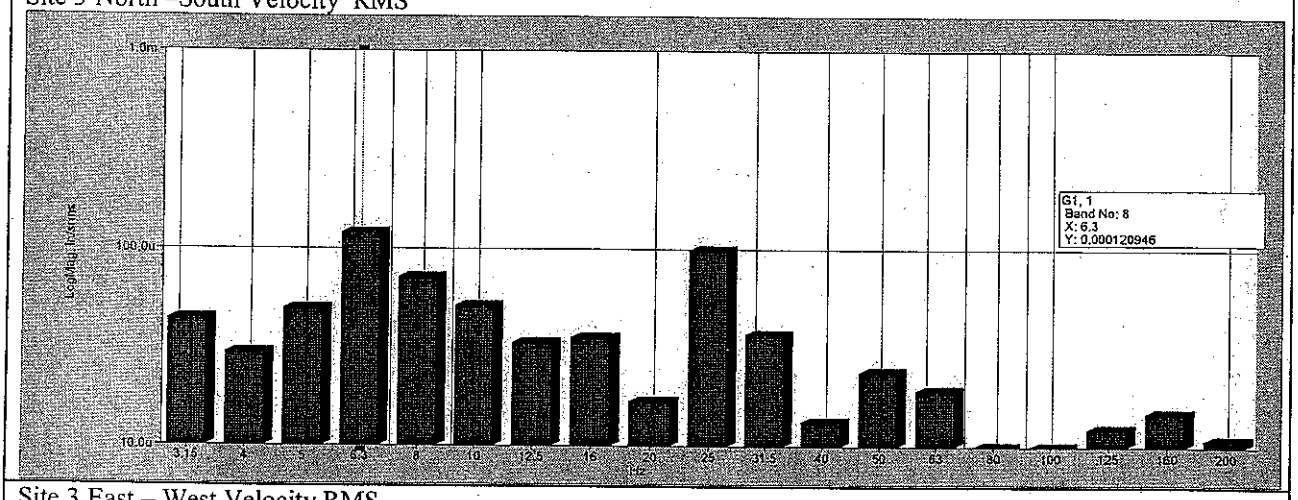
Site 2 East – West Velocity RMS



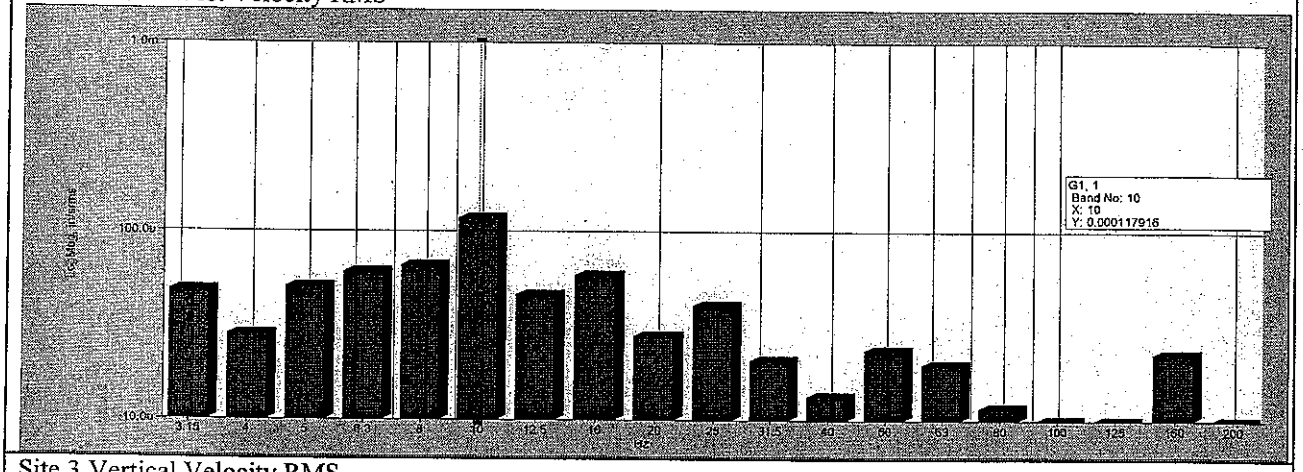
Site 2 Vertical Velocity RMS



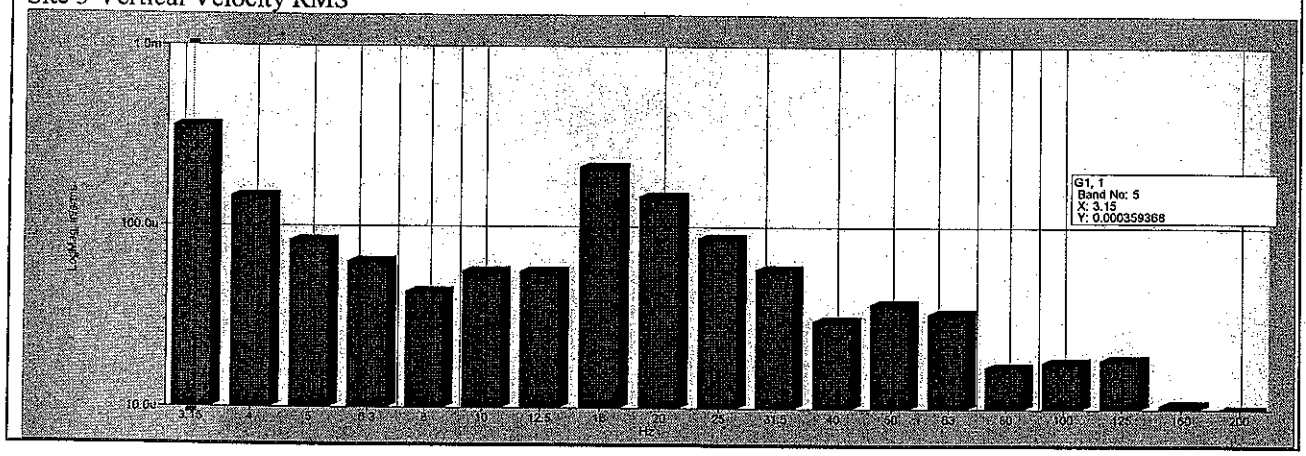
Site 3 North –South Velocity RMS



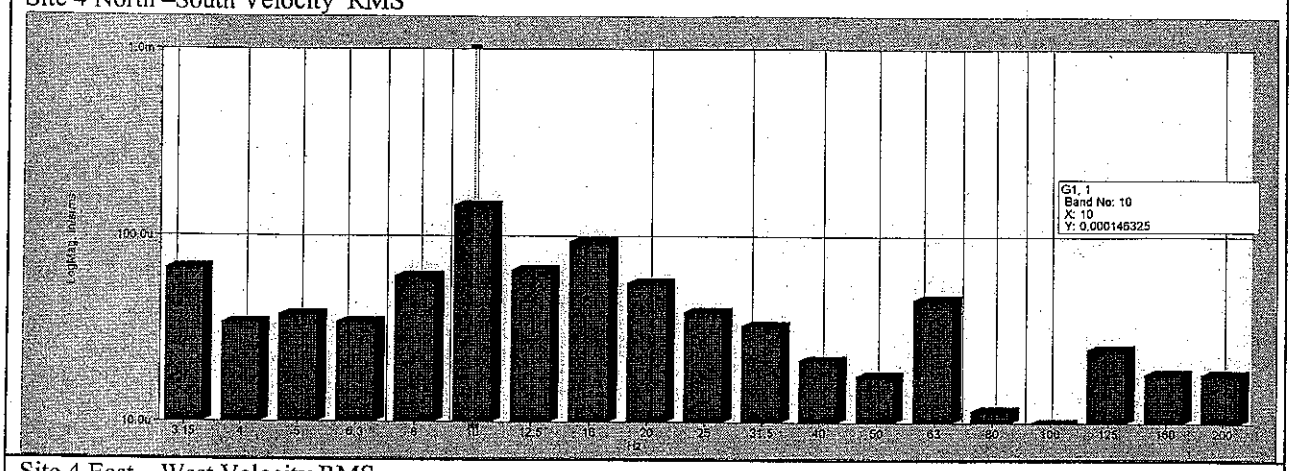
Site 3 East – West Velocity RMS



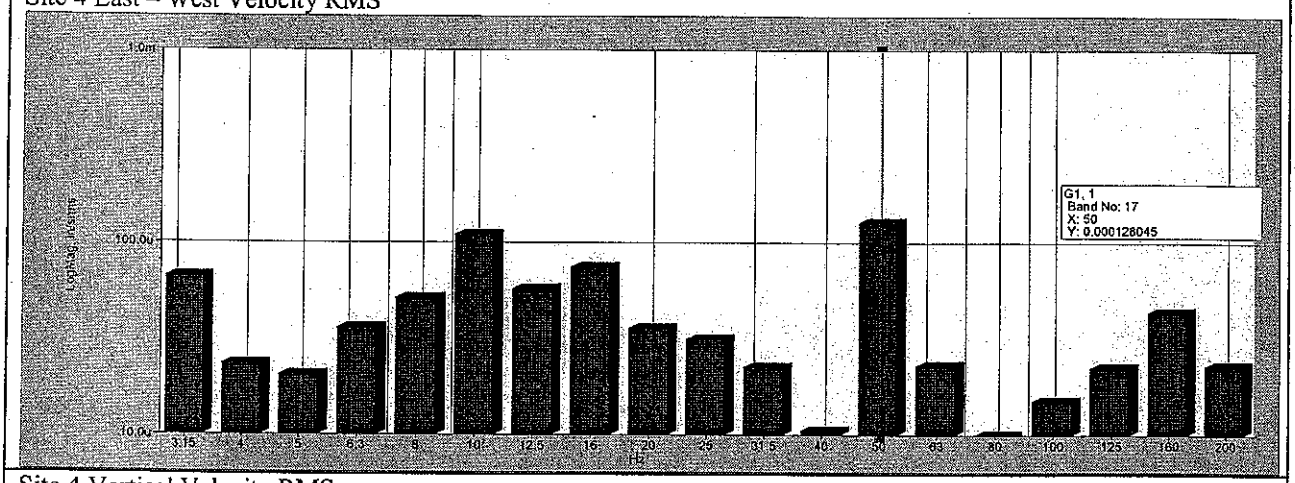
Site 3 Vertical Velocity RMS



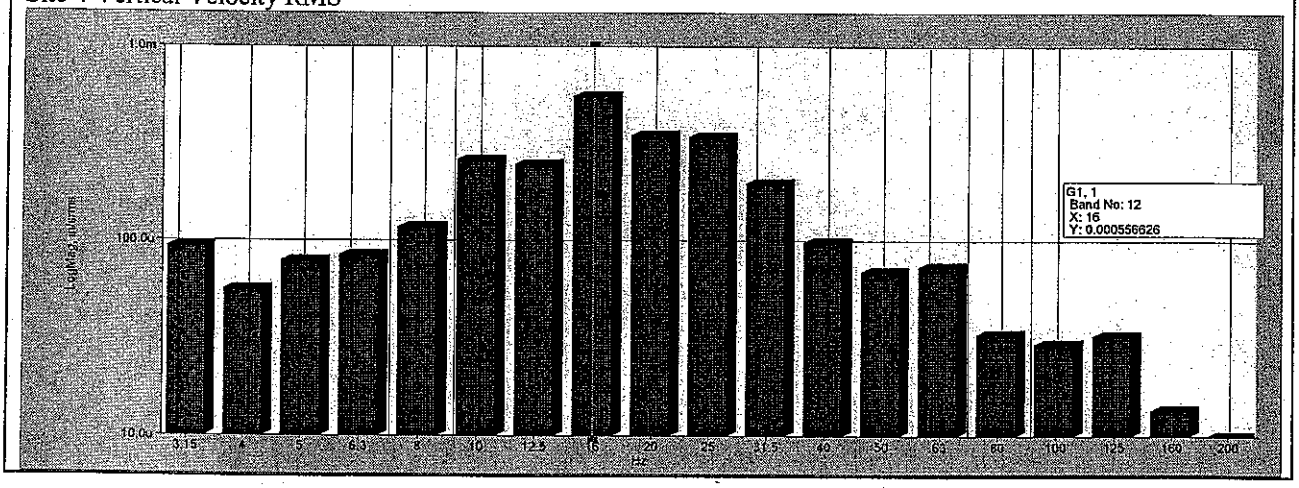
Site 4 North –South Velocity RMS



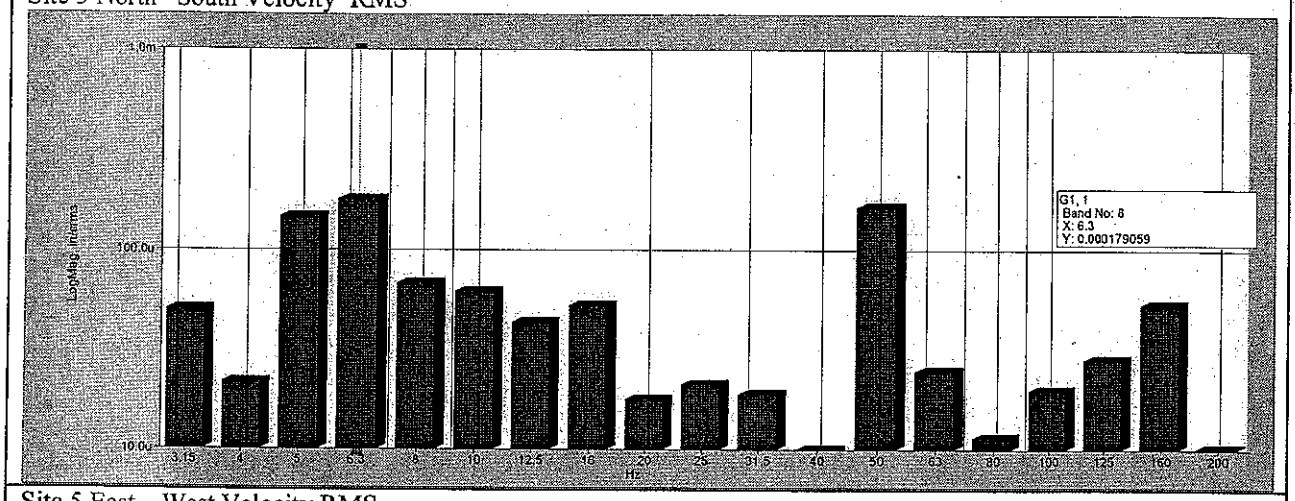
Site 4 East – West Velocity RMS



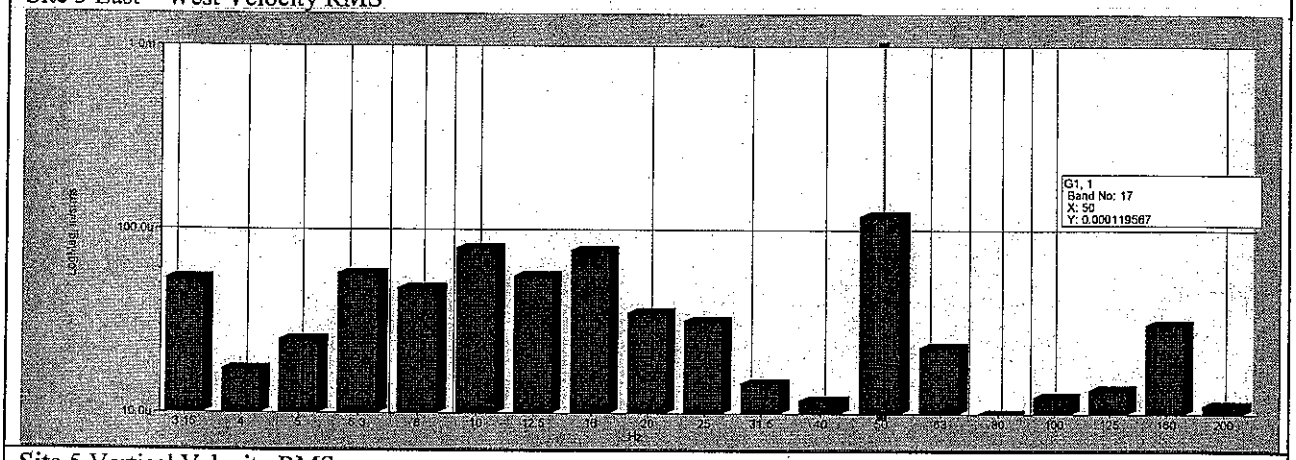
Site 4 Vertical Velocity RMS



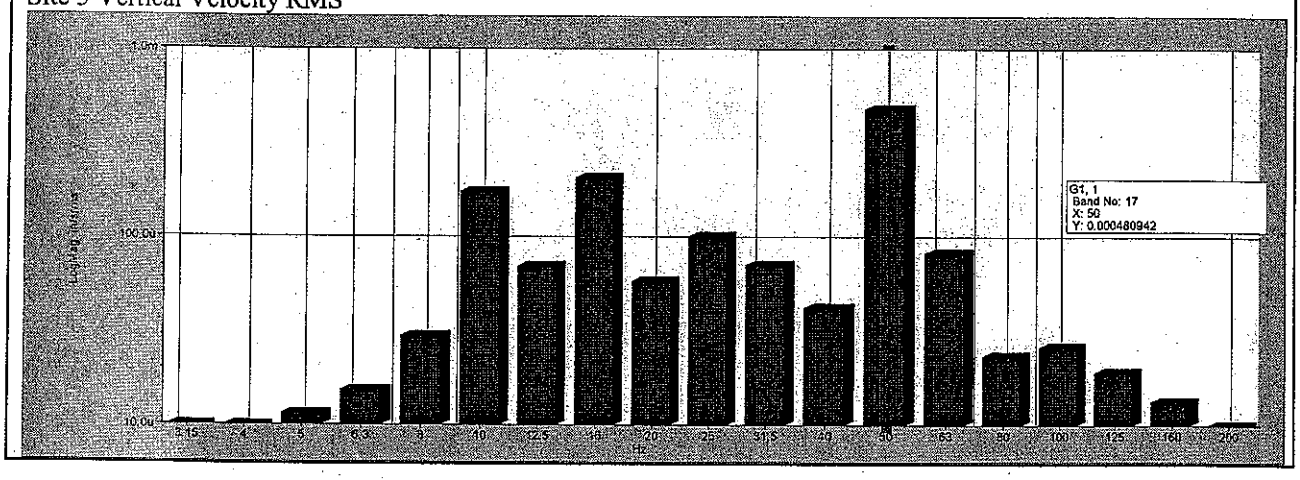
Site 5 North –South Velocity RMS



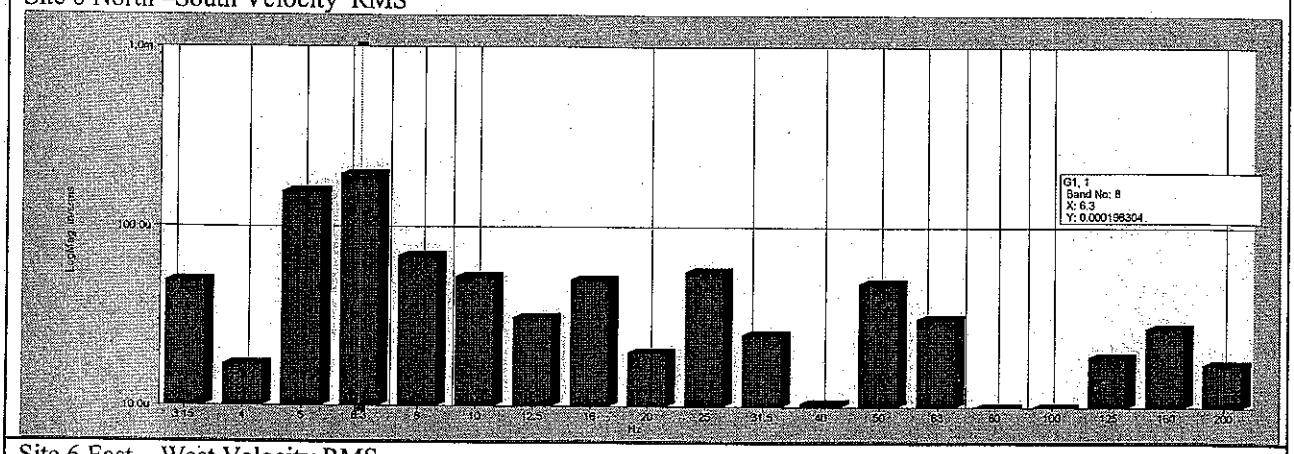
Site 5 East – West Velocity RMS



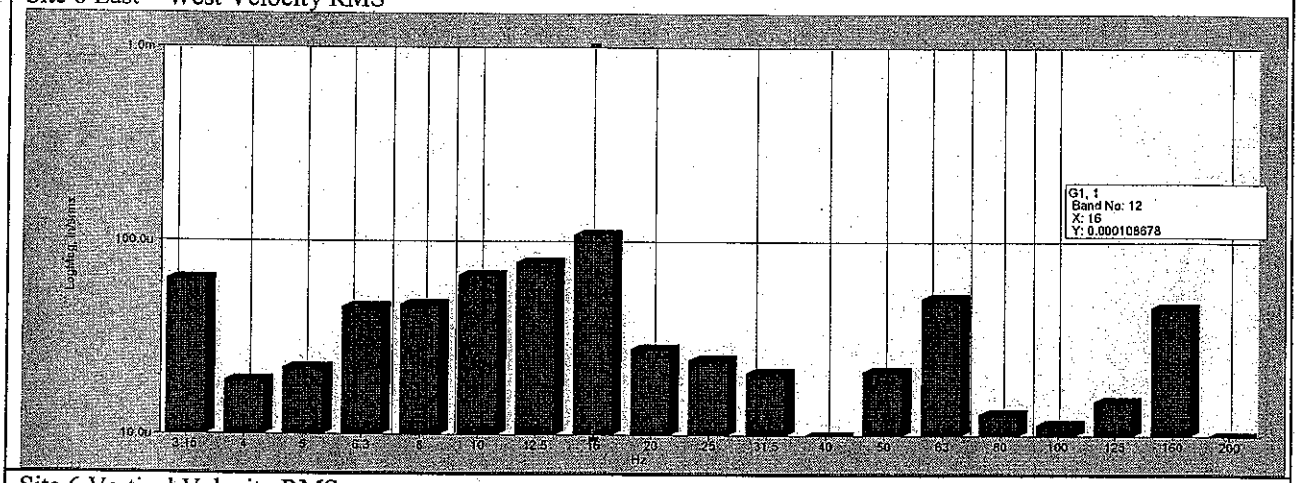
Site 5 Vertical Velocity RMS



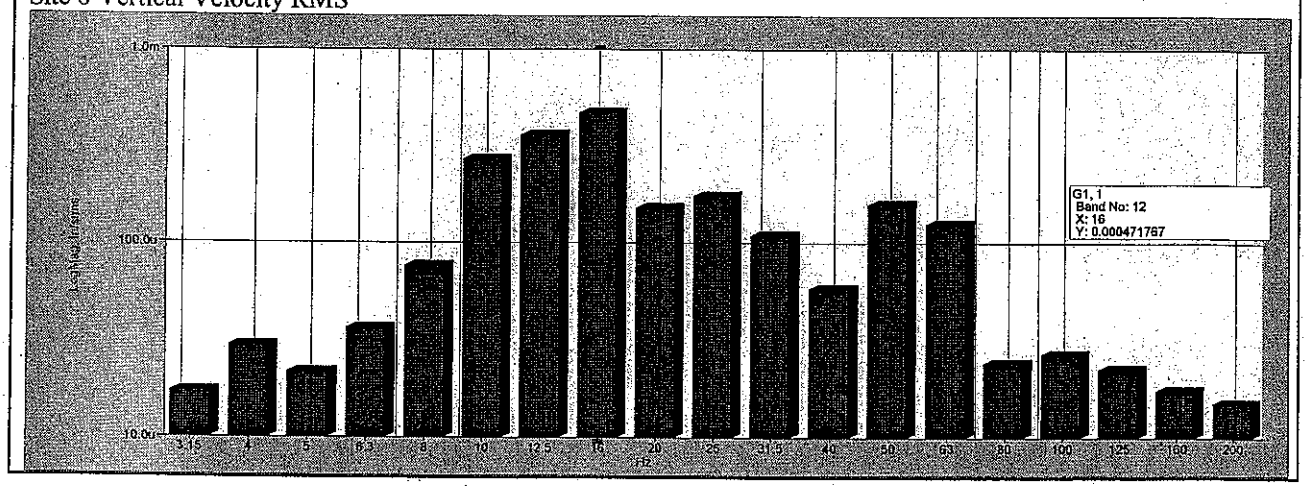
Site 6 North –South Velocity RMS



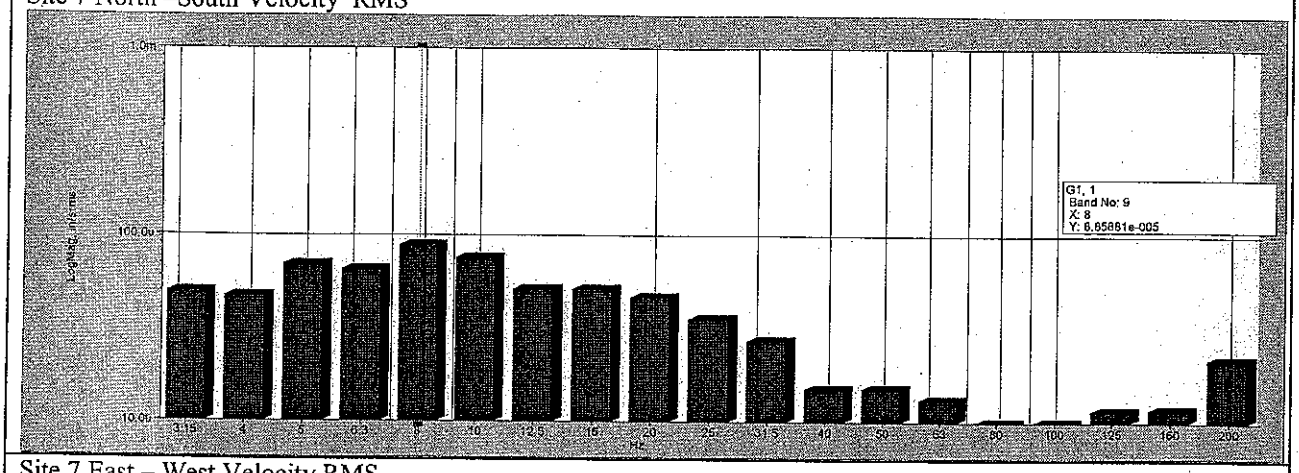
Site 6 East – West Velocity RMS



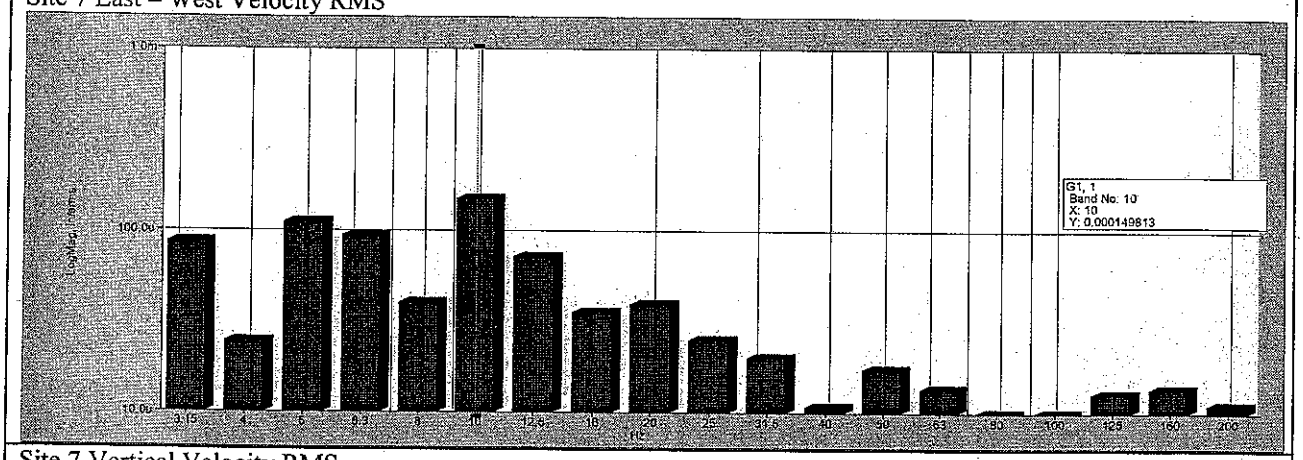
Site 6 Vertical Velocity RMS



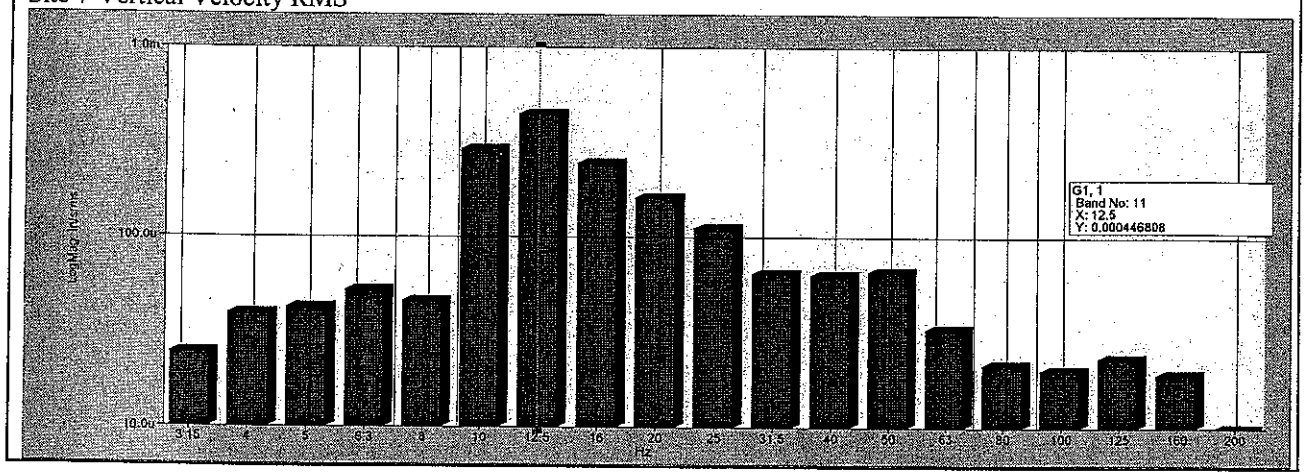
Site 7 North –South Velocity RMS



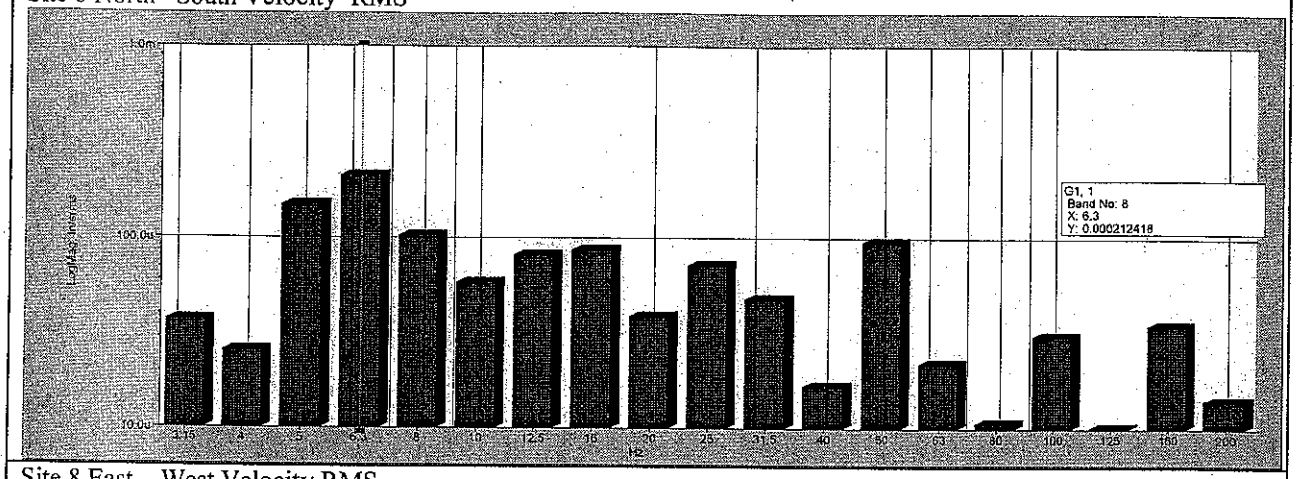
Site 7 East – West Velocity RMS



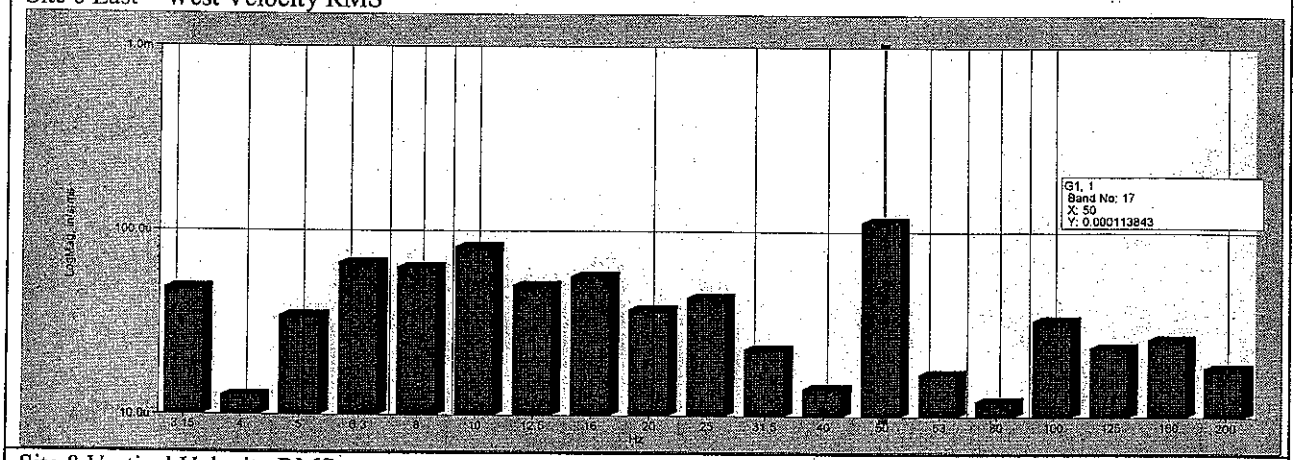
Site 7 Vertical Velocity RMS



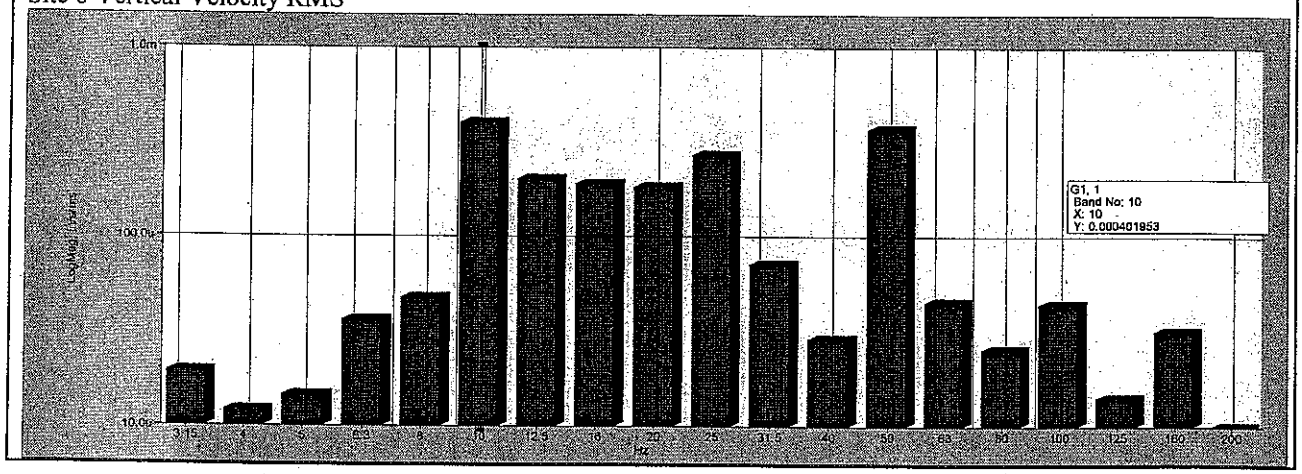
Site 8 North –South Velocity RMS



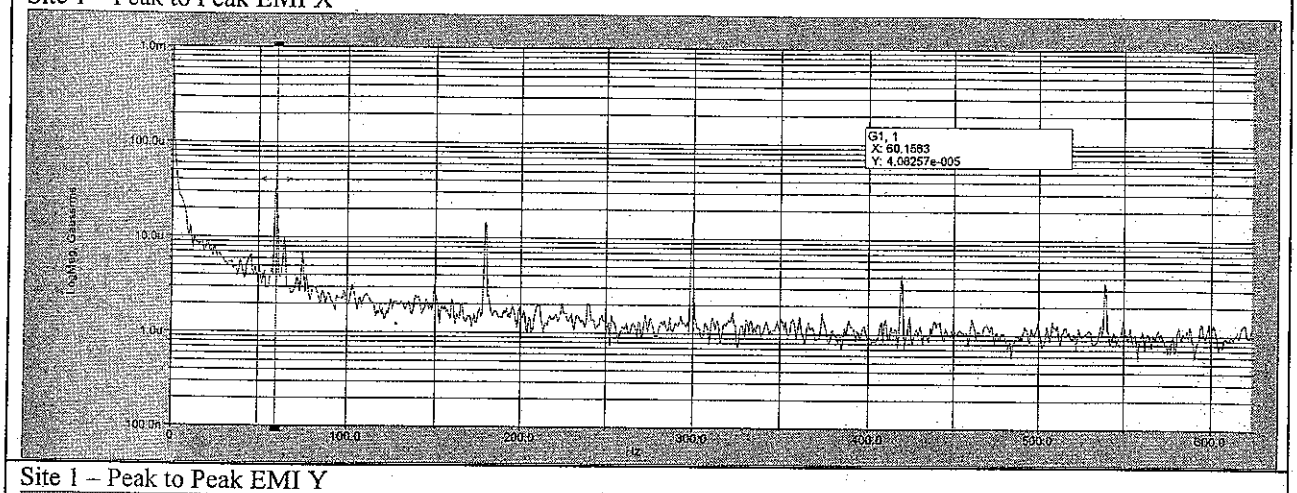
Site 8 East – West Velocity RMS



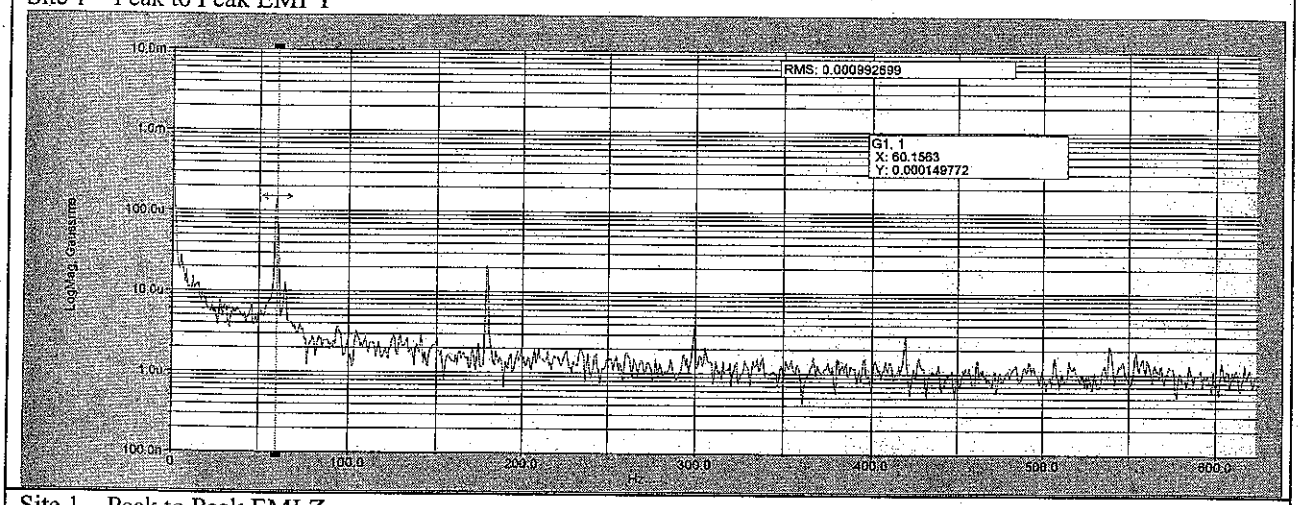
Site 8 Vertical Velocity RMS



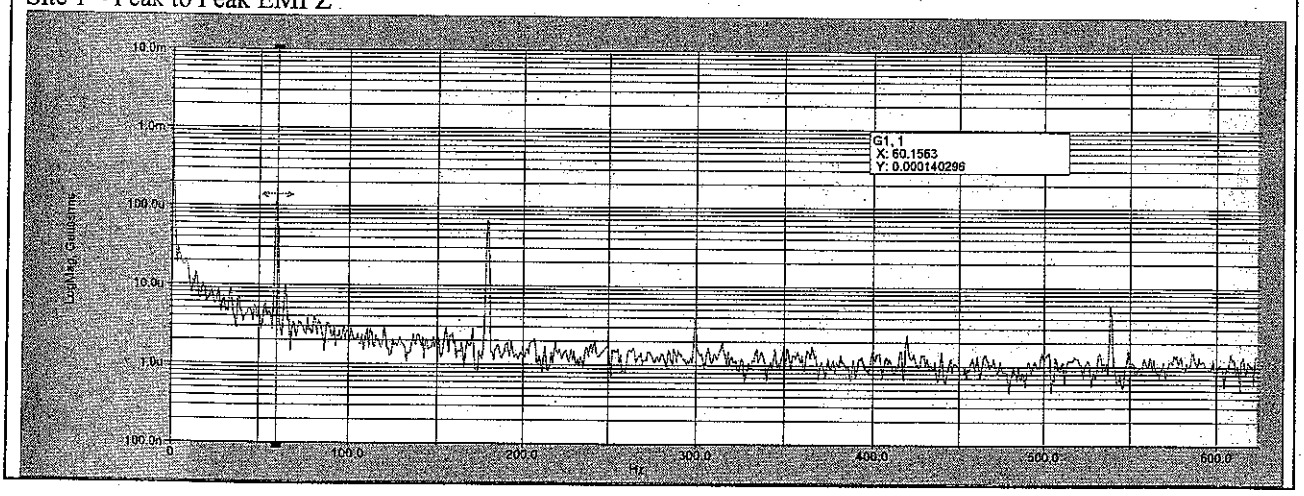
Site 1 – Peak to Peak EMI X

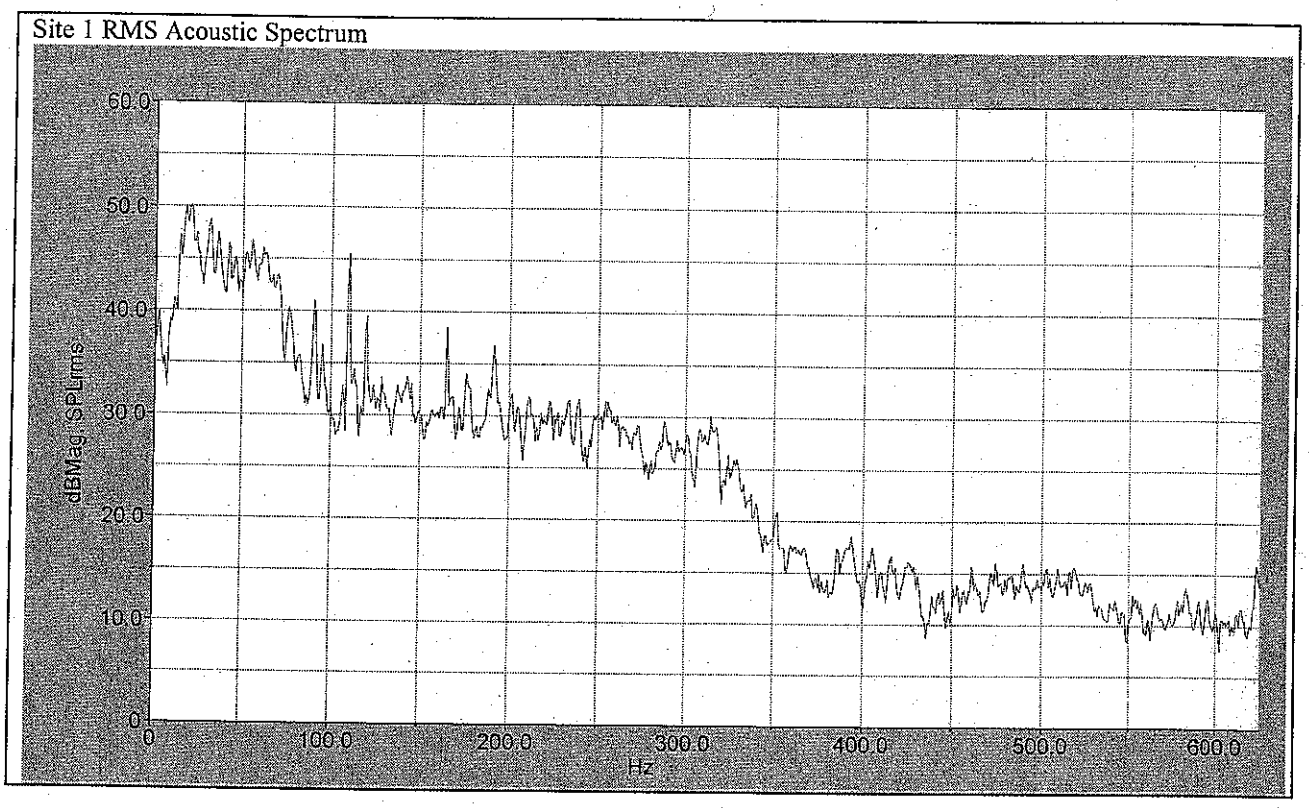


Site 1 – Peak to Peak EMI Y



Site 1 – Peak to Peak EMI Z




Site 1 RMS Acoustic Spectrum
60.0
50.0
40.0
30.0
20.0
10.0
0
dBMag SPLrms
0
100.0
200.0
300.0
400.0
500.0
600.0
Hz