


## AGU Fall Meeting 2009

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### Attenuation Analysis of Quarry Blast Vibrations

T. Brooks<sup>1</sup>; A. M. Courtier<sup>2</sup>

1. School of Engineering, James Madison University, Harrisonburg, VA, United States.

2. Department of Geology and Environmental Science, James Madison University, Harrisonburg, VA, United States.

In this study we analyzed seismograms created by rock quarry blasts and the effect of rock composition and structure on the attenuation of seismic energy. Luck Stone, a well-known rock quarry company in Virginia, provided the seismic database with the goal of analyzing rates of attenuation at their Boscobel and Leesburg sites, which consist of different rock types (granite and diabase, respectively). Over the years, the sites where these quarries are located have become progressively more residential. As a result, public awareness of quarry blasting has increased, and vibrations in residential areas are increasingly reported. Luck Stone operates seismometers throughout the region and closely monitors vibrations. We analyzed changes in amplitude and frequency content of quarry blast seismograms using power spectra, and compare the rate of attenuation with the propagation distance and local rock type. Our results improve the understanding of how these different rocks types attenuate energy and may help quarries develop specific approaches to further diminish blast vibrations at these locations. We also briefly discuss a comparison of the quarry blast data with attenuation of seismic energy from local earthquakes in similar rock types.

### Contact Information

Tim Brooks, Falls Church, Virginia, USA, 22046-0000, [click here](#) to send an email

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