

AMPLITUDE AND FREQUENCY VARIATION OF VIBRATION WAVELETS ASSOCIATED WITH OVERLAPPING WAVE TRAINS

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ABSTRACT

A vibration record is a complex of motions resulting from a combination of direct, reflected and refracted seismic energy that originated at a blast source. Multiple hole blasting using delays further complicates the motion in that overlapping of seismic wave trains may occur when delays do not fire in the programmed sequence. This can result in variations in amplitude, frequency and wave-length of the vibration. Amplitude may be doubled, frequency may oscillate between the highest and lowest frequencies present and wave-length may approach doubling of the longest wave-length present. These effects can present serious problems to conducting a safe blasting program since increased amplitudes and lower frequencies present higher damage potentials for structures. The development of these effects is described and illustrated graphically to show how these effects can occur.