

EFFECTS OF EARTH PROPERTIES ON STRESSES AND MOTIONS NEAR UNDERGROUND EXPLOSIONS

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Empirical data from measurements in and beyond the crater are presented for explosions in different geologic settings. Representative wave forms are shown as well as relationships between peak amplitudes of stress and motion and distance from the explosion.

Comparisons among results in different media indicate the peak stresses and accelerations may differ by as much as two orders of magnitude. For soils the most influential earth property is the degree of water saturation; pronounced increases in peak stress and acceleration are observed as saturation approaches 100 percent.

Stress and motion data are presented in scaled form so that the information may be used readily to estimate effects for different explosive quantities.