

signal proxies for explosive yield and scaled depth of burial during the Source Physics Experiment

Phase I of the Source Physics Experiment (SPE) was a series of six underground chemical explosions in granite. The experiment focused on improving the nuclear explosion monitoring community's understanding of the seismo-acoustic signatures of buried explosions. We discuss the amplitude, impulse, and peak frequency of each shot with respect to explosive yield and depth of burial. We describe a set of empirical models that relate explosion parameters to acoustic signal properties and assess the strengths of each. We assess the descriptive power of each model for the six events during the SPE Phase 1 and estimate their applicability for acoustic signals from explosions of unknown yield and scaled depth of burial.

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