

## **ON AIRSLAP-INDUCED AND CRATER-RELATED NEAR-SURFACE GROUND MOTIONS FROM HE EXPERIMENTS**

COOPER,H.F.

The extremes of our understanding of near-surface ground motions from HE cratering events are illustrated by considering two subsets of the HE test data base. For vertical airslap-induced ground shock, the airblast loading conditions are well known, the ground motions physics is understood, first-principle calculations are credible, and the data base presents a consistent and fairly complete picture on which to base predictions for both HE and nuclear sources. For low frequency crater-related near-surface ground motions, the source region phenomenology and the influence of geologic layering are poorly understood, first principle calculations are not yet credible, and the experimental data base is inconsistent. In future experiments, predictions of airslap-induced peak vertical motions in new, but known, geologies can probably estimate the mean of the data scatter expected on a well-instrumented experiment to within 10-20 percent. Best estimates of crater-related ground motion amplitudes are expected to fall within the data scatter on well-instrumented experiments in new geologies, but past experience suggests that systematic deviations from the measured mean value could be as large as a factor of 3.