

PARTICLE MOTION EQUATIONS AND THEIR PREDICTION
IN THE CLOSE REGION OF UNDERGROUND EXPLOSIONS

by

Vladimír Schenk^I

The relation between the values of the maximum amplitudes of the ground particle motions A_m , the distance R from the explosion and its weight W are frequently used for determination to what degree a building is endangered by the effects of originated seismic waves. These dependences are usually approximated by the expressions

$$A_m = A_0 R^{-M} W^N,$$

where the coefficients A_0 , M , and N are estimated by the least-squared method from measured data. Clearly, the number of observations or the interval of distances R or the range of weight W of the charge are greater, the accuracy of determining above mentioned relations is better. It is also known, that the nature of these dependences is affected not only by the values R and W , but also by the type (high or nuclear explosions, impact, etc.) and shape of explosive source (spherical, cylindrical, etc.) and the depth of its burial (cratered or contained explosions), as well as by the physical properties of the medium and the type of seismic wave (longitudinal, shear, or surface waves or their phases and components). The complexity of the problem of predicting the effects of seismic waves generated by underground explosions on buildings are presented in the paper.

^I Geophysical Inst. of the Czechosl. Acad. Sci., Prague 4 -
Spořilov, Boční II. čp. 1401, 141 31 Czechoslovakia.