

AIRBLAST OVER NONIDEAL SURFACES

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The interaction of nuclear fireball radiation with the earth's surface can give rise to a particulate-laden thermal layer which will support an airblast precursor. The associated near-surface flow field is currently not well understood. A survey of the existing data base, albeit sparse, underscores the inadequacy of predictions using present calculational models. A knowledge of airblast over nonideal surfaces is crucial for assessing the survivability of targets that are sensitive to the dynamic pressure component.

Several simulation techniques have been considered to investigate various aspects of the formation of a pre-shock thermal dust layer. These techniques employ several sources of radiation including a solar furnace, flashlamps, and a flashpowder technique. Recently completed as well as ongoing soil irradiation experiments are described. A comparison of the experimental data with two-phase radiation hydrodynamics calculations is presented. Potential simulation techniques aimed at coupling soil irradiation with an airblast source are discussed.