

Experiments are described in which Styrofoam blocks were mounted in three orientations (upright, horizontal on the surface, and horizontal in shallow foxholes) in a 50-ton TNT surface burst.

From the number and sizes of the dents left in the blocks by tree fragments and crater ejecta, the secondary blast hazard to personnel was estimated as a function of range and type of exposure. The tertiary blast hazards were estimated using the measured blast wave parameters and a mathematical model of translation. Six anthropomorphic dummies were placed in the forest to obtain total displacements and thereby to partially verify the translational model.

The primary blast hazard was estimated from the measured blast wave parameters and earlier studies involving several mammalian species. The hazard was computed as a function of initial orientation for a man in the forest and in the open since pressure records in a cleared sector differed somewhat from those in the forest.

Measured steel-sphere velocities were used to further verify the translational model and to estimate the positive dynamic-pressure impulses at three ranges in the forest and in the cleared sector. These impulses agreed well with those obtained by other experimenters and, in general, the forest seemed to have little effect on the impulse although the shape of the wave was apparently changed.

The overall blast hazards to personnel in a forest and in an open area are discussed in terms of range, overpressure, and type of exposure.