

ABSTRACT

This report describes an analysis of the various host area fall-out shelter options currently being considered for implementation in a nuclear crisis situation. The cost effectiveness and feasibility of different combinations of shelters were examined under various soil and water table conditions and availabilities of resources. These parameters characterize host areas in different geographical regions of the country.

Cost effectiveness was used as a relative measure of each shelter design's use of critical resources. Resource requirements were identified and quantified for three different time periods; the precrisis, crisis, and postcrisis time periods.

Linear and parametric programming analyses were then carried out to evaluate different combinations of shelter options and the results of these analyses were used to define the applicability and cost effectiveness of each shelter design under various host area conditions.

Existing facilities were found always to be preferable to expediently constructed shelters, regardless of the conditions in the host area.

Certain expedient shelter designs were found to be cost effective in most situations; while others were found never to utilize resources cost effectively.

As a final stage of the research, a host area shelter planning guide was developed. This guide presents a step-by-step procedure to be followed by the local planner in choosing shelter options to utilize in a particular host area. Several numerical examples are included to demonstrate the use of the guide.