

SHOCK ISOLATION EXPERIMENTS IN A HARDENED SHELTER PROGRAM

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A program of shock isolation/mitigation experiments is being conducted by the Ballistic Research Laboratory in cooperation with the development of hardened shelters by the Harry Diamond Laboratories. The objective of this work has been to investigate techniques for reducing the severity of shock loads transmitted from the hardened structures into the electronic systems installed in equipment racks inside the shelter. In accomplishing this goal a number of shelter/equipment rack survivability tests have already occurred or will take place shortly. The facilities of the Centre d'Etude de Gramat and of the Atomic Weapons Research Establishment have been made available for this purpose, as well as the HE nuclear simulation events.

Thus far the thrust of the experimental program has been largely ad hoc, adapting existing shock isolation devices to the hardened shelters being tested. This information obtained is fairly generic, however. Large amounts of shelter/rack acceleration and displacement data have been generated and processed using frequency spectrum analysis algorithms. The isolation devices chosen have clearly proven effective in reducing transmitted shock loads. The shelter/isolator/rack mounting configurations have been varied to determine optimal design.