

BIAXIAL TRANSIENT SIMULATION TESTS FOR COMMUNICATION EQUIPMENT TO MATCH HIGH EXPLOSIVE FIELD TEST DATA

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Blasts from conventional explosives and NWE induce severe loadings on mobile command, control, and communication equipments. Equipments enclosed in communication shelters and mounted on military tracks were exposed to blast loadings in Dice Throw and Misers Bluff Events. Test records from these events indicated broad band multi-axis response with peak accelerations approaching 1000 g's with dominate frequency responses between 700 to 1000 Hz for exposure times of 65 to 100 milliseconds. Simulation of these equipment responses required the development of multi-axis mechanical pulse train force generators.

Using the structural impulse systems function of equipment, pulse trains were generated by a random search algorithm to force motion into the equipment to match (within a selected error criterion) motions recorded in high explosive tests. Application of this rather simple low cost simulator for blast loading permitted systematic hardening of command, control, and communication systems to threat levels well above those experienced in the high explosive tests.