LARGE BLAST AND THERMAL SIMULATOR (LB/TS) GROUND SHOCK TRANSMISSION EVALUATION

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The U.S. Army Waterways Experiment Station (WES) assessed the ground shock effects that would result from operation of the planned Large Blast Thermal Simulator (LB/TS), to be built at the U.S. Army White Sands Missile Range in New Mexico. The purpose of this study was to determine the threat that these effects pose to operation of other facilities located nearby. The work was sponsored by the U.S. Army Harry Diamond Laboratories, Adelphi, Maryland.

The maximum energy likely to be transferred into the ground by normal operation of the LB/TS was calculated, and this energy was related to that which would be released by an equivalent lumped high-explosive (HE) charge detonated at a shallow depth of burial. We conducted three statistical explosive tests at the proposed LB/TS site using the calculated HE equivalent charge (1,000 lb ANFO) and measured the transmitted shock at the ground surface from a point near the explosive source (100 ft) out of maximum range of 10,000 ft.

The results of the study indicated that no unacceptable environmental ground shock threat should exist, even for extrapolations to much higher explosive energy levels. The ground motions that were transmitted from the designated LB/TS location to distances of interest were well below any damaging level. Based on these results, the desired site was determined to be acceptable for construction and operation of the proposed LB/TS.