

EFFECTS OF WATER TAMPING ON AIRBLAST AND CRATERING FROM AN ABOVEGROUND CYLINDRICAL CHARGE

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A phenomenology experiment was conducted by the U.S. Army Engineer Waterways Experiment Station (WES) at Fort Polk, Louisiana, to determine the effects of a cylindrical charge detonated above the ground surface and tamped with water. The experiment showed significant asymmetry in the blast wave as it propagated on to the ground surface. In an attempt to explain the physics associated with the interaction of the water and Detonation products on the blast wave, an Eulerian finite volume calculation was conducted utilizing multiple processors on a CRAY C-90 located at WES. This calculation grid consisted of 14 million cells, used 600 megawords of memory, and 12 processors to reproduce about 15 milliseconds of the blast event. The results of the calculation clearly show the effects of the water tamping on the Detonation products. Similar to the experiment, the calculation also showed the same degree of asymmetry in the blast pressures on the ground and is in excellent agreement with the experimental results.