COMPARISON OF THE HOB CURVES FOR 0.5G NP CHARGES WITH FIELD TEST DATA.

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Experiments are described on the reflection of spherical blast waves from planar surfaces. The blast waves were created by the detonation of 0.5g spherical charges of NITROPENTA. The scale of the experiments was about 1/1000 per kiloton. Diagnostics included schlieren photography and a high-speed pressure measurement system. A parametric series of height-of-burst (HOB) experiments were conducted over hydrodynamically smooth and rough surfaces. Peak overpressure measurements were used to construct isobaric HOB curves. We found that the experiment HOB curves were significantly below those based on the von Neumann two-shock theory in the transition region between regular and Mach reflection. This effect surpresses the extended knees in the HOB curves in the low pressure regime. This trend was confirmed by comparison with data from large-scale tests that employed much larger charges (1 to 500 kg).