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Effect of Shockwave Curvature on Run Distance Observed with a Modified Wedge Test RICHARD LEE, NSWC, Indian Head Division MD, ROBERT DORGAN, AFRL, Eglin AFB FL, GERRIT SUTHERLAND, ARL, Aberdeen MD, ASHLEY BENEDETTA, Virginia Tech, Blacksburg VA, CHRISTOPHER MILBY, ETC, La Plata MD — The effect of wave curvature on shock initiation in PBXN-110 was investigated using a modified wedge test configuration. Various thicknesses of PBXN-110 donor slabs were used to define the shockwave curvature introduced to wedge samples of the same explosive. The donor slabs were initiated with line-wave generators so that the introduced shock would be the same shape, magnitude and duration across the entire input surface of the wedge. The shock parameters were varied for a given donor thickness via different widths of PMMA spacers placed between the donor and the wedge. A framing camera was used to observe where initiation occurred along the face of the wedge. Initiation always occurred at the center of the shock front instead of the sides like that reported by others using a much smaller test format. Results were compared to CTH calculations to indicate if there were effects associated with highly curved shock fronts that could not be adequately predicted. The run distance predicted in CTH for a 50.8 mm thick donor slab (low curvature) compared favorably with experimental results. However, results from thinner donor slabs (higher curvature) indicate a more sensitive behavior than the simulations predicted.

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