

Abstract Submitted
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A Theoretical Exploration of the Differences between Prompt and Bow Shock Initiation of Explosives by Shaped Charge Jets CHRISTOPHER MELLOR, HUGH JAMES, MICHAEL GOFF, AWE, Aldermaston — The use of the CREST reactive burn model in conjunction with results from the open literature demonstrates the differences between prompt and bow shock initiation, even when the diameter of the shaped charge jet is much larger than the failure diameter of the explosive. The burn model shows the need for the bow shock to build in strength before reaching an amplitude where significant reaction is triggered, and hence explains the observed very long runs to detonation required by this mechanism. While the compression of the explosive between the bow shock and the jet provides much greater pressures than those seen in the bow shock, the relative thermodynamic inefficiency of the compression process means that this region contributes little to the direct generation of reaction.

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