

COMPARISON OF A FAST RUNNING ENGINEERING MODEL AND A COARSE MESH 3-D EULER PREDICTIONS FOR AIRBLAST IN AN URBAN ENVIRONMENT

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ABSTRACT

Two recent model developments for airblast in an urban environment enable engineers to assess the vulnerability of structures with greater accuracy with reasonable computational times. The first development is a fast running model that utilizes engineering principles to accurately predict the airblast in an urban environment. This model utilizes an image burst approach to capture the effects of reflections from surfaces near the shock. The model also uses a shortest path algorithm to estimate the effects of shielding by nearby structures. The second model development is a coarse mesh 3-D Euler CFD solver. This approach utilizes a database containing fine mesh runs of various threat sizes and various stand-offs as an initialization. The model then captures the airblast environment in the urban setting by carrying out the calculation using a coarse 3-D Euler mesh. The paper presents a comparison of the two models and assesses each model's strengths and weaknesses.