

NUMERICAL PREDICTION TO ASSIST IN THE DESIGN OF A PRECURSOR EXPERIMENT

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A series of two- and three-dimensional hydrodynamic calculations are used to design the critical parameters for a full-scale precursor experiment to be conducted during the Summer of 1993. Parameters being investigated include the width of the high sound-speed layer, the length of the layer needed to provide the desired increase in positive duration, and impulse.

The height of the layer will be kept to a practical minimum currently estimated to be about 15 cm. A full description of the precursor flow including turbulence and boundary layer effects will be evaluated for each of several planned experiments.

Results of free-field environment calculations will be used as boundary conditions for specific vehicle loading calculations at three specified ranges. The loading calculation results will be used to calibrate instrumentation and make final adjustments to the instrumentation plan. This paper reports the results of the predictive calculations and discusses the impact of the calculations on the experiment design. If results of the test are available by the time of the symposium, we will include comparisons of the calculated and experimental results.