

HYDROCODE CALCULATIONS OF DESIGN LOADS FOR THE US LB/TS

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The NMERI GUSH (GenUinely Simple Hydrocode) program has been used to predict blast environments for the US Large Blast/Thermal Simulator (LB/TS) and to calculate detailed load time histories on several of its components. Both two-dimensional (2D) and three-dimensional (3D) calculations were performed, and results were used as criteria for facility design.

Blast environments were calculated for both the interior of the LB/TS tunnel and the external sire area. The effects of various design options (such as open versus closed ejector ports in the test section roof) on test station environments were also studied. Loads were calculated for the upstream expansion tunnel and endwall, the test section with targets of various sizes, and the downstream expansion tunnel and Rarefaction Wave Eliminator (RWE). RWE loads were calculated for rotating louvers using the "moving island" capability of GUSH which is unique among Eulerian hydrocodes. An overview of the calculational setups is presented, the methodology is describes, and key results and design impacts are discussed.