NUMERICAL SIMULATION OF THE PROPAGATION OF BLAST WAVES IN SIMPLE TUNNEL SYSTEMS

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The propagation of blast waves in tunnels and enclosures are of general interest in Several engineering fields (shelter design, etc.). Blast waves decay in amplitude and increase in length with distance from the detonation point. The knowledge of tile behavior of blast waves inside tunnels arid enclosures is not far developed. Experimental measurements have proven difficult to interpret because the instrument response is sensitive to location arid orientation. There is a need to better understand and predict blast effects in tunnel systems. Computational Fluid Dynamic (CFD) is a comprehensive tool to study complex phenomena in tunnel created by blast waves. The advantage is obvious. One can get data of the blast wave properties at any place and any time of tile computational domain.

The main interest of this work is to study the influence of the tunnel geometry to the blast parameters. To this purpose five different geometries have been analyzed. One of these geometries, the straight tunnel, was used as the reference problem to value the other tunnel geometries.