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Numerical simulations of large high explosive charge detonating near ground surface with shallow layer of soil before ground rock

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Numerical simulations have been conducted in Autodyn 2D and 3D to study how a large high explosive (HE) detonation near ground generates airblast loads. The airblast was systematically studied by comparing results with assumption of rigid ground, or with influence of different type of soils and their depths to rock. Other parametric studies carried out were the influence due to type of explosive, charge geometry and the presence of a nearby HESCO wall. The aim was to investigate, using numerical simulations in Autodyn, how accurately the propagation of the air shock wave can be predicted. These simulations were conducted independent of the results from the experimental test of a large HE detonation near ground surface within the SHIELD program.