

RECOILLESS RIFLE BREECH PRESSURE SHOCK WAVES IN LARGE, VENTED ENCLOSURES

JENSSEN,A.;GUICE,R.L.

The firing of weapons from enclosures (e.g., armored personnel carriers, bunkers, etc.) will create a blast environment which is very complex. The complexity arises from the reflection of the primary or incident blast wave (breech and muzzle blast) off of various surfaces such as the floor, walls, and roof. Additionally, these reflected waves may also reflect creating other generations of reflected waves. Depending on the blast wave strength and angle of incidence, single, double and triple Mach reflections may occur. In addition to creating additional waves, these reflections may also enhance the amplitude of the blast wave. Therefore, the incident overpressure at certain locations may be several factors higher than the primary blast wave alone. These enhancements to the environment can dramatically decrease the survivability of personnel or equipment that is located in the enclosure.

The Norwegian Defense Construction Service (NDCS) has initiated a program to investigate the complex blast wave phenomena. This program consists of both experimental research (Ref. 1, 2) and analytical model development (Ref. 3) from bare explosive charges, recoilless rifles, and small caliber rocket launchers initiated in enclosures. This paper describes the experimental portion of the CBW program using the recoilless rifle and rocket launchers as the blast source. Descriptions of the test site, tests conducted and a brief analysis of the results will be presented.