

## **BIOLOGIC RESPONSE TO COMPLEX BLAST WAVES**

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Small charges were detonated inside an M 59 personnel carrier (APC) in an attempt to simulate the complex blast waves generated by the penetration of shaped-charge warheads into armored vehicles. Anesthetized sheep were inside the APC at 91- and 122 cm-ranges from 57- or 113 g pentolite charges. Pressure time was measured by pressure transducers mounted on the animal at comparable ranges on the opposite side of the vehicle. In general, the waveforms consisted of a high initial shock front of short duration (less than 1 ms) followed by repeated reflections of decreasing magnitude. There were no deaths nor lung hemorrhages observed. All the animals sustained severe ear injuries. Those inside the APC subjected to peak overpressures of 1.1 to 2.4 bar from the 113 g explosions also received slight non-auditory blast injuries in the upper respiratory tract and in the gastrointestinal tract; those exposed to peak overpressures of just under 1 bar from the 57 g charge did not. The non auditory blast injuries inside the APC were more severe than were those sustained by sheep at comparable distances from the 113 g charges in the open. The initial peak pressure and impulse over the first 2 - 3 ms of the wave was suggested as the effective air blast dose for complex blast waves of the form encountered in this study.