

## THE ATTENUATION OF BLAST RESULTANTS USING WATER

RINAUDO,M.A.; SMITH,P.D.; ROSE,T.A.

Blast waves produced by the detonation of high explosives can be very damaging to both people and property. To reduce such damage, energy-absorbing systems are needed to provide blast wave attenuation. A range of materials has been used in the past to reduce blast wave overpressure and impulse levels. However, until recently, there appears to have been relatively little use of water as an attenuating medium.

This paper discusses the results of an experimental study carried out at small scale to investigate the effect on blast overpressure and impulse levels when high explosive hemispherical charges surrounded by, and in contact with, hemispherical volumes of water were detonated. Results indicate that there is a significant reduction in blast wave overpressure and impulse for water-covered charges in comparison with the same charges detonated in free air. It is suggested that a significant part of the explosive's energy is transferred to the surrounding water, which is converted to steam leading to a reduction in blast wave resultants.

By presenting graphs of overpressure and scaled impulse plotted against both scaled distance based on the range from the explosion to the measuring location and on the radius of the hemispherical water cover, it is possible to use the results of these model-scale experiments to predict the performance of larger attenuating systems.