

Abstract Submitted
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Electromagnetic Radiation From The Detonation of Metal Encased Explosives WILLIAM BROWN, MARK SCHMIDT, Applied Research Associates, Inc., Capital Area Division, PETER DZWILEWSKI, TIMOTHY SAMARAS, Applied Research Associates, Inc., Rocky Mountain Division — Electromagnetic radiation accompanying the detonation of chemical explosives was first reported in 1954. Such emissions result from detonations of both bare and cased explosives. However, the dominant wavelengths of emissions from these two types of explosions generally differ by as much as three or four orders of magnitude. We present results of far-field and near-field experimental measurements of electric fields emitted by metal encased explosives, and show that metal fracture is the dominant mechanism leading to these emissions. Additionally, we present results of computational analysis of explosive fracture of steel cylinders performed to investigate the correlation between the time-dependent fragment size distribution and the pattern of electromagnetic emissions. This work supported by the Defense Threat Reduction Agency under contract DTRA01-01-C-0033.

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