

# **The Laboratory Determination of Dynamic Pressure Resistance of Cap-Sensitive Explosives**

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## ABSTRACT

Sharp transient stress waves generated during the delay blasting of underground coal can damage unfired borehole charges remaining in the delay pattern. These tremendous stress pulses in coal bear a strong resemblance to underwater shock waves, despite differences in rise times, damping rates, and scaling relations. "Shock wave" terminology is adopted to distinguish the sharp transient waveforms propagating through the coal from the gas-driven stresses that rift the coal. Reported waveform characteristics of shock waves through underground coal were utilized to design a simulator test for rating the impact resistance of cap-sensitive explosives. Theoretical minimum borehole separations were determined for each cap-sensitive explosive from the requirement that worst-case waves hitting an unfired charge would not exceed its impact resistance rating. Rugged explosives have higher impact resistance and will function properly at smaller borehole separations. Additional work is required to verify the findings from the simulator technique and modeling relations reported here.