

UNITED STATES DEPARTMENT OF LABOR  
Mine Safety and Health Administration

EVALUATION OF ELECTRONIC DEVICES  
REQUIREMENTS FOR  
SHIELDING CIRCUITRY

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By

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## CAPTIONS

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Figure 5 --

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MSHA has received a number of inquiries concerning how to apply the MSHA requirements for shunting and circuit testing to electronic detonators. The purpose of this report is to discuss the technical findings and the issues of “shunting” and “circuit testing” for electronic detonators with regard to the MSHA standards.

With respect to \_\_\_\_\_ detonators, the coal and metal-nonmetal mine requirements for shunting and circuit testing are specified in 30 CFR 77.1303 (y)(1),(2),(3) and 77.1303(z); 56.6401(a),(b),(c); 56.6407(a),(b),(c),(d) and 57.6401 (a),(b),(c) and 57.6407 (a) and 57.6407 (b). \_\_\_\_\_ blasting systems are designed differently than electronic detonator systems and the design features are not the same. Each electronic detonator system differs in design, construction, operation and testing features.

In order to resolve the issue of “shunting and “circuit testing”, technical information was needed on the details of the various electronic detonators systems. The manufacturers as well as the Institute of Makers of Explosives (IME) were queried for

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