

APPLICATION OF LIGHTNING DETECTION AND WARNING SYSTEMS WITHIN THE EXPLOSIVES AND BLASTING ENVIRONMENT

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ABSTRACT

Lightning has always posed a serious threat to blasting operations, especially within the mining and construction industries. In recent years, technological advancements in communications systems and microprocessors have significantly improved the accuracy and efficiency of lightning detection and warning instrumentation. These advancements have increased the availability of highly reliable, accurate and affordable systems for use within the explosives arena.

Access to these systems, which detect the presence of, or potential for, cloud-to-ground lightning, is exposing personnel to one of the most complex elements of atmospheric physics. Armed with this 'scientific data', engineers and managers are expected to make the right decision all of the time, decisions that will have a significant impact on personnel safety, productivity, and the company's material resources. It is a fact of life that the data they are dealing with is not perfect, can be misinterpreted, and in many cases, can result in false alarms. Such factors will not only reduce the effectiveness of the system in the everyday environment, but also, significantly undermine user confidence in the system which could slow response/reaction to future warnings.

The intent of this paper is to; (1) provide the reader with a basic understanding of thunderstorm/lightning meteorology, (2) review various technologies used in the detection and advance warning of lightning events, (3) address lightning effects on cables, (4) discuss methods used to display data and the impact they have on user applications and, (5) offer an objective approach to developing procedures for application of the lightning data.