

## **BLAST WAVE MEASUREMENT TECHNIQUES: PASSIVE AND MECHANICAL SELF-RECORDING DEVICES**

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Techniques to measure the airblast from explosions undoubtedly go back in history to the time when black powder was first discovered. To investigate the literature on devices used to measure blast over such an extended period would require a monumental effort, so for the purposes of this discussion we have restricted the coverage to the period of the mid-forties to the present time. Emphasis is placed on gages which have been deployed on tests with moderate to large size explosive charges, from 1000 pounds to megatons. Atmospheric nuclear tests as well as high explosive tests fit this description.

Passive gages of many different varieties were used extensively during the early years of testing because they were relatively inexpensive and budgets were tight. As time progressed, however, researchers were more and more compelled to seek out time dependent measurements in order to gain a fuller understanding of the airblast phenomena. The number of different passive devices being used were supplanted by time devices, and today only three to four of the passive gages are to be found in testing programs. Passive devices will be discussed in terms of then (those used at one time but no longer in use) and now (those types which are being used today).

A natural step forward in blast measurement technology was to develop devices that would yield the blast parameter with time. Thus mechanical self-recording time gages came into being largely because they were relatively insensitive to the harsh environment of a nuclear explosion in contrast to an electronic system which was more susceptible to such an environment. These gages for the most part were self-contained units, were relatively inexpensive, and were easy to field in large numbers.