EVALUATION OF DIRECT MEASUREMENTS

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The typical detonative blastwave is characterized by two properties that make it difficult or even impossible to measure directly the exact pressure-time history. First, the pressure changes abruptly from ambient to the peak overpressure at the shockfront. Secondly, the blastwave is really peaked; the pressure drops in the moment of peak overpressure.
Any measurements of blast pressure from field tests and model tests is incomplete and has a margin of error. The problems that result from the physical properties of the pressure sensors can be reduced by skillful experimental measures. As they cannot be completely avoided their effects will be illustrated by measures pressure-time histories and schematic diagrams.
Ideas, that were discussed in the literature of five decades to overcome operational problems with blast gages by analytical methods have been collected. Digitized data curves from transient recorders and the easily available computer capacity allow to make those ideas effective for the evaluation procedure. An interactive, computer-aided procedure has been developed to evaluate pressure-time histories and to get sets of consistent blast data for planar, cylindrical and spherical blastwaves. The steps of the evaluation procedure will be illustrated.One example for consistency is that the peak overpressure, as calculated from the shockfront velocity must be in agreement with an exponential fit equation to the pressure-time history. The advantage of consistent blast data is more reliability in comparing theory with experiment. They facilitate the data reduction process, allow to determine the yield of a detona-
tion and to generate pressure-time histories for problems of target response.