

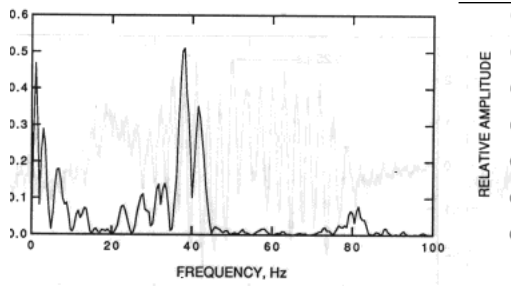
COMPUTER SIMULATIONS TO DETERMINE THE EFFECTS OF FIRING TIME SCATTER

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ABSTRACT

The Bureau of Mines has developed computer software to study the effects of initiator scatter on all aspects of the blasting process. The software is useful because it is difficult to obtain actual initiator data, particularly the standard deviation which is needed to express initiator scatter. The new software is structured to allow blasters to answer the question: how precise must initiators be to insure a successful blast? Successful is defined statistically in terms of a confidence level. The software can be used with any possible design since there are no restrictions due to size or complexity.

This paper describes the new software and how it is used. The software can easily be adapted to other blasting problems including the effect of initiator scatter on ground vibration levels and their frequencies. A specific example is given which highlights the program's usefulness. The importance of using precise initiators is discussed. All of the software is written in FORTRAN and can be run on any computer which supports FORTRAN.



7.- Fast Fourier Transform of synthetic waveform composed of eight single-hole blasts, at exactly 25 ms (figure 5). Figure

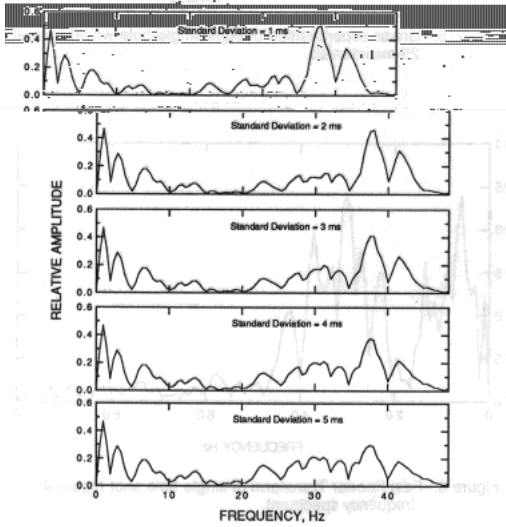


Figure 8.- Change in Fast Fourier Transform due to initiator scatter.