

APPLICATION NOTE



BLAST VIBRATION MONITORING

Blast Vibrations are Regulated

Explosives can greatly benefit excavation tasks, particularly when excavating through rock for road cuts, tunneling, and mining. Use of explosives near habitations and vulnerable structures must be very carefully done to avoid damage to structures. Fortunately this problem has been faced for many years and the Office of Surface Mining Reclamation and Enforcement (OSMRE) has conducted extensive research on the subject. Public Law 95-87, Title 30 of the Code of Federal Regulations, Section 816.67 provides for monitoring of blast vibrations and establishes the necessary procedures for collecting and analyzing this data.

Modern Instruments

Modern blast monitoring instrumentation has many advantages over older equipment including:

- Digital accuracy, usually offering at least 1 part in 2000 resolution
- On-board digital clock for accurate recording of the time of events
- Event triggered recording, with adjustable trigger thresholds
- On-board digital memory with enough capacity for as many as 70 events
- Battery powered

GEOVision can augment these systems with:

- Extra battery capacity for up to one week unattended recording for extra cost savings
- Modem connection for remote interrogation
- Secure, environmental housing

Typical Scope of Work

GEOVision engineers and geophysicists have more than 35 years experience in vibration monitoring. GEOVision is responsible for installing each blast-monitoring device, collecting and processing data. Typical tasks include:

1. Install blast monitoring system at client specified site. This includes a triaxial, digital recording, blast seismograph with uninterruptable power supply and NEMA 12 secured, stainless steel housing. The seismograph is mounted in firm soil using 4" steel spikes.
2. Collect data with minimum frequency of once per week. For frequent blasts, or for blast level control, more frequent data collection is necessary. At the same time, batteries are changed and any required maintenance is performed. Once data is downloaded, memories are cleared.
3. Processing of blast data yields a "shot report" including velocity time histories, peak velocities, and response spectra for each axis for direct comparison with the OSMRE regulations defined in Public Law 95-87, Title 30 of the Code of Federal Regulations, Section 816.67(d)(4)(i) and (ii) Blasting Level Chart. This report, including one chart for each event, is faxed to the client within a few hours of data collection.

Key Benefits

The important benefits of blast monitoring are:

- Protection from litigation. Properly documented, high quality, and unambiguous records of all blast effects, demonstrating compliance with OSMRE requirements have proven effective in limiting or preventing costly law suits
- Improved control over blast levels. Quick and direct feedback on blast levels permits immediate adjustment and control over blast levels.

