



ENGINEERING AND CONSULTING DIVISION
MINING ENGINEERING, SURVEYING AND PERMITTING SERVICES
SURVEY AND MAPPING

- UNDERGROUND MINE SURVEYING
- TOPOGRAPHIC SURVEYING AND MAPPING
- PROPERTY SURVEYING



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UNDERGROUND MINE SURVEYING

Miltech Energy Services, Inc. employs a licensed professional surveyor with 20+ years of underground surveying experience. That experience includes work in both hard rock (limestone) and bituminous coal mines.

For many years Miltech has been responsible for all surveying at a Central Pennsylvania underground limestone mine. This work included:

- Providing sites according to projections for future mining
- Performing surveys and check surveys to be used for mine mapping
- Special surveys for equipment installations etc.
- Outside surveys for surface facilities related to the underground mine

At another operation a power plant client planned to install an injection bore hole into a nearby abandoned underground coal mine. The underground coal mine had used a coordinate system for which control points on the surface no longer existed. Miltech used GPS technology to locate shafts and bore holes that existed on the surface and also appeared on mine maps. The underground mine workings were then related to the surface State Plane coordinate system. The surface coordinates for the desired bore hole were then determined and surveyed to establish the bore hole location.

Miltech is equipped to provide underground mine surveying services, and surface surveying services related to underground coal mines, as required for special projects or on a regular basis.

For additional related information see:

- Topographic Surveying and Mapping
- Property Surveying
- Stockpile Inventory



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TOPOGRAPHIC SURVEYING AND MAPPING

Miltech Energy Services, Inc. employs a licensed professional surveyor who is also proficient in drafting, and the use of AutoCAD. These skills are utilized when the topography of a site is needed. The site is first surveyed using conventional surveying methods, or GPS (Global Positioning Satellite) technology, depending on the application. The survey data are then reduced in the office, entered into an AutoCAD program, and site topography is plotted. Cross sections and profiles through the site can also be plotted, as required.

Site topography is needed for determining earthwork or grading requirements for construction projects. Topography is also needed when coal (or other) stockpile volume estimates are needed, or for determining the volume of a coal refuse pile. In these cases, original ground topography is used with the surface topography of the stockpile, or refuse pile, to calculate volume. Three-dimensional mapping is often useful in these cases for reports and presentations.

Miltech utilizes topographic surveying and mapping when evaluating fuel supplies for waste coal CFB (circulating fluid bed) power plants, as well as for coal stockpile inventories. However, the technique can be used for many other applications where accurate volume estimates are required.

For additional related information see:

- Underground Mine Surveying
- Property Surveying
- Stockpile Inventory



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PROPERTY SURVEYING

Miltech Energy Services, Inc. employs a licensed professional surveyor with 20+ years of surveying experience. That experience includes many years of work in the coal industry, as well as surveying related to highway construction, and to property delineation. Property surveying often requires preliminary research at the county court house, including the review of deeds and other legal documents. Miltech provides property-surveying services primarily to industrial clients, although personal property surveys are also provided in certain circumstances. Property maps and descriptions are prepared for clients, as required.

For a coal burning power plant planning to install a large overland slurry pipeline, Miltech surveyed the pipeline routing, and delineated property ownership for needed right of way agreements. Both GPS and standard surveying techniques were used for this large surveying project.

For additional related information see:

- Topographic Surveying and Mapping
- Stockpile Inventory
- Underground Mine Surveying