

USING THE EARTH'S CURRENTS TO CUT DRILLING COSTS

Telluric Currents

Traditionally, the accepted method for exploration has been borehole drilling. Borehole drilling has been the only practical means of both collecting subsurface coal samples for analysis and providing hard data on depth and thickness.

Through advanced research in the science of tellurics, a new geophysical tool has been developed that could reduce the need for boreholes. Depending on the project, a telluric survey could save 50% to 75% of a mine's drilling budget. The technology is based on a branch of science dealing with the Earth's electric field, better known as electrotellurics.

Telluric currents, induced by pulsed currents in the upper ionosphere, flow as electrical currents in the Earth's crust. The currents generate an electromagnetic wave that descends vertically. At the surface, a lateral wave is formed, which moves horizontally. The re-radiations from all depths can be detected by an electric field strength sensor.

Since its 1920 discovery, several scientists have attempted to harness telluric currents using different techniques. Finally in 1984, the first electrotelluric receiver was introduced for commercial applications. Electrotelluric data can be graphed in a format similar to downhole logs, and defines both the depth and thickness of specific coal beds at independent stations. The number of survey stations required for a given project is a function of acreage, spacing and geologic complexity. Today's field equipment is compact and portable.

Electrotelluric survey capabilities extend beyond just strike and dip. Other more exotic applications include the ability to detect coal bed rolls and faulting, as well as sandstone channels and old works.



Geophysics International geologist Jack Brim, Sr. Engineer Mike Grigore and Staff Assistant Paul Longworth at the El Dorado Mine site in New Mexico. Thunderstorms washed out the regular crossing so they crossed the river on this old bridge one plank at a time!



COALPLEX CEO Dan Longworth, Sr. Engineer Mike Grigore and Mr. Carl Ford, Manager of Spring Gardens, Inc., Brush Greenhouse Partners. Mr. Ford is expanding the 18 acre modified hydroponic system they use to grow 1.6 million pounds of tomatoes per year.