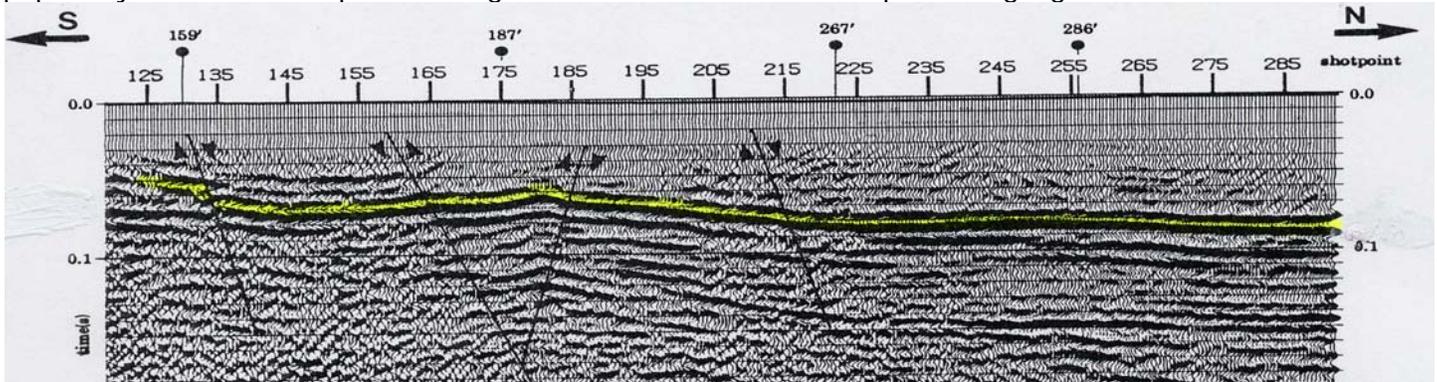


High-Resolution Shallow Seismic Imaging of Geologic Structures

Seismic imaging methods have been used effectively by the petroleum and mineral industries to map subsurface structures. Application of seismic technology to image shallower targets has slowly gained popularity with the development of high-resolution instruments and processing algorithms.



The high resolution shallow 2D seismic image above (Gochioco, 1992 and 2004) reveals dramatic coal seam elevation differences between four boreholes (159', 187', 267' and 286'). These major differences indicate significant faulting across the survey area. The seismic data demonstrate the valuable subsurface information it can provide. Mine engineers and geologists can re-design a new (& safer) mine plan to circumvent this problem area. In coalbed methane, faulted areas are sweet spots.

Water is a valuable resource. Detecting and mapping aquifer fractures is important for better resource management. Seismic imaging methods can be used to detect and image these fractures. Advanced algorithms are available to enhance the interpretation process to determine the general orientation of the fracture systems in both carbonates and clastics. Through continuous

The founder, Lawrence M. Gochioco, P.G., has over 15 years of diverse near-surface geophysics experience. He has published over 25 technical papers and feature articles in various journals & magazines, and is an editor of his professional society (SEG). The company provides a wide spectrum of near-surface geophysics services and consulting.

subsurface profiling, calibrated with borehole information, an aquifer's structure can be mapped.

As petroleum and environmental goals differ, it is important to note that geophysicists are not trained equally. Specialized skills and training are required to properly design, acquire, and process shallow high-resolution seismic data. Lawrence M Gochioco, the founder of LM Gochioco and Associates Inc., directed a multi-faceted coal geophysics program for Consol Energy from 1985-2000. Various geophysical technologies were developed to address this company's complex exploration, engineering, and environmental problems. The R&D group provided geotechnical services to operations that included geology, geophysics, hydrology, and ground control in a multi-disciplinary team environment

LM Gochioco and Associates Inc. have broad experience integrating geophysics into hydrology, geology, and environmental engineering. Depending on your specific challenges, LM Gochioco & Associates Inc. can design the most appropriate geophysics program that will address your near-surface problems. We possess diverse experience and expertise in all near-surface geophysical technologies: high-resolution surface seismic, magnetometer, electromagnetics, ground-probing radar, ground conductivity, electrical resistivity, etc.