



# Satellite-Synchronized MT Network 3-D Applications



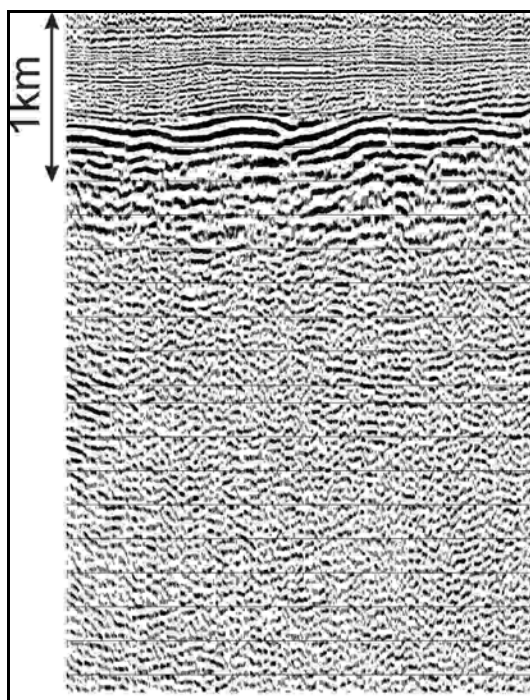
• tel.: +1 416 491 7340 • fax: +1 416 491 7378  
• www.phoenix-geophysics.com • mail@phoenix-geophysics.com

## Bulgarian 3-D MT Survey in Oil-Prospective Areas

Northwest Ltd., Moscow, Russia, using Phoenix System 2000 MT equipment, carried out extensive MT surveys in Bulgaria in 2003-2004. The main objective was to explore oil-prospective Late Paleozoic rocks. Northwest acquired more than 1200 MT soundings in three different areas.

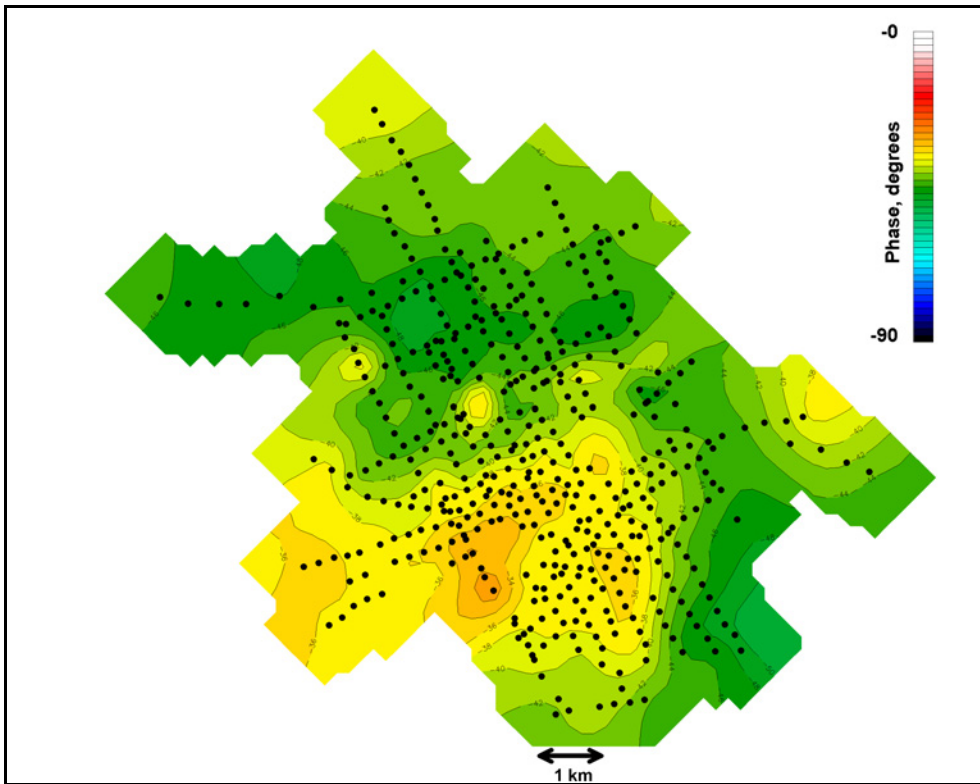


A highly successful 3-D MT survey was carried out in the northeastern part of Bulgaria in the year 2004. More than 500 MT sites were collected in an area of about 100 square kilometers, at 500m spacing.



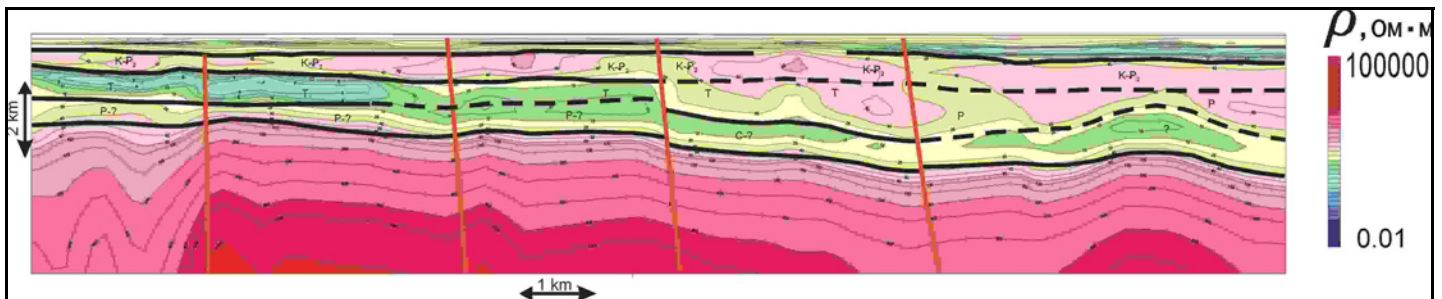
### MT Sees Clearly Below 1km Seismic Barrier

A highly reflective layer of dense Cenozoic rocks forms an acoustic barrier at a depth of about 1km. Seismic methods produce almost no information below this layer, as shown on the cross-section at left. MT exploration, however, clearly showed the presence of the oil-prospective layers in the Upper Paleozoic rocks.



Local horst and depressions can be seen easily in the phase map (period 1 second), shown at left. The black dots in the figure represent the MT sites.

The figure below shows the 1D inversion of longitudinal curves along one of the seismic profiles. During the inversion, each iteration was produced using MT data from all the neighboring points. Thus, all the geoelectrical cross-sections are in accordance. Geoelectrical borders and their geological interpretation are also shown.



### High Confidence in Results

Final cross-sections and geoelectrical maps are in good agreement with known structural and seismic data in the upper parts of the cross-section (first 1000–2000 meters), so Northwest is confident that the results obtained are correct and complete.

