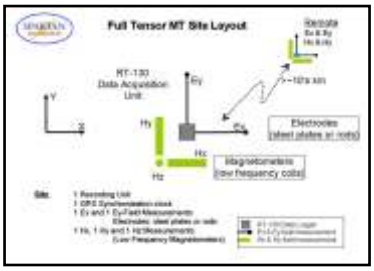
# Spartan MT Deep Resistivity Sounding

## GEOPHYSICAL EXPERTISE:

The magnetotelluric method is used to map the spatial variation of the earth's resistivity by measuring naturally occurring electric and magnetic fields at the earth's surface. These natural EM fields are generated in the atmosphere mainly by solar wind and distant lightning strokes.

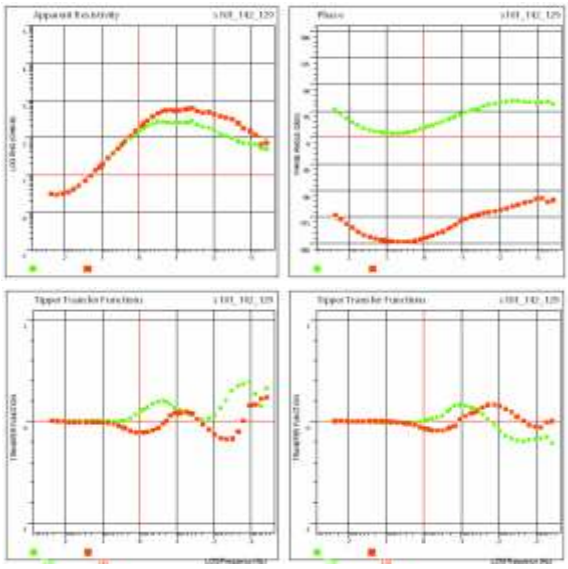



The full tensor Spartan MT system provides a unique way to obtain deep resistivity over a variety of terrains. The system is typically deployed to collect deep resistivity in semi regional to regional applications, from 300 metre to 2000 metre site separation. With high portability and flexibility of distribution,

Spartan MT is environmentally friendly and unobtrusive, with depth of investigation from 400 metres to 10,000 metres, and more.

Spartan MT can also be used to help target Titan 24 distributed surveys to collect more precise and deep subsurface information.

## MT SOUNDING CURVES



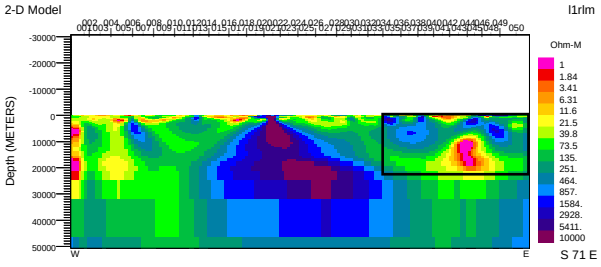
Sample MT curves from the 2007 Isa-Georgetown-Charters Towers Research Project, a collaborative project undertaken by Geoscience Australia and the Geological Survey of Queensland Department of Mines & Energy) and using the services of Terrex Seismic and Quantec Geoscience.

Data shows three days acquisition to obtain 1000 sec MT data and obtaining deep information on the lower crust (+20-30kms).

*Data shown courtesy of*

Queensland Government

## REGIONAL TRANSECT




240 kilometre traverse in northwest Nevada, a basin and range geologic setting. Data inverse modeled to 25 kilometres depth, showing top of conductive structure at 9 kilometres.

## FEATURES:

- Improved accuracy of MT data due to high resolution signal processing, simultaneous field measurements, continuous profiling, and a broad band MT at a frequency range of 400 Hz to 0.001Hz
- Sophisticated digital signal processing
- High volume full, multi-fold wave-form data sets drive accuracy into the inversion process improving resolution and interpretability

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## APPLICATIONS:

- Deep terrain-scale structural mapping
- Large area target potential evaluation
- Environmentally sensitive and remote terrain
- Extremely rugged terrain
- Shallow crustal-scale hydrocarbon exploration
- Deep crustal studies
- Geothermal exploration

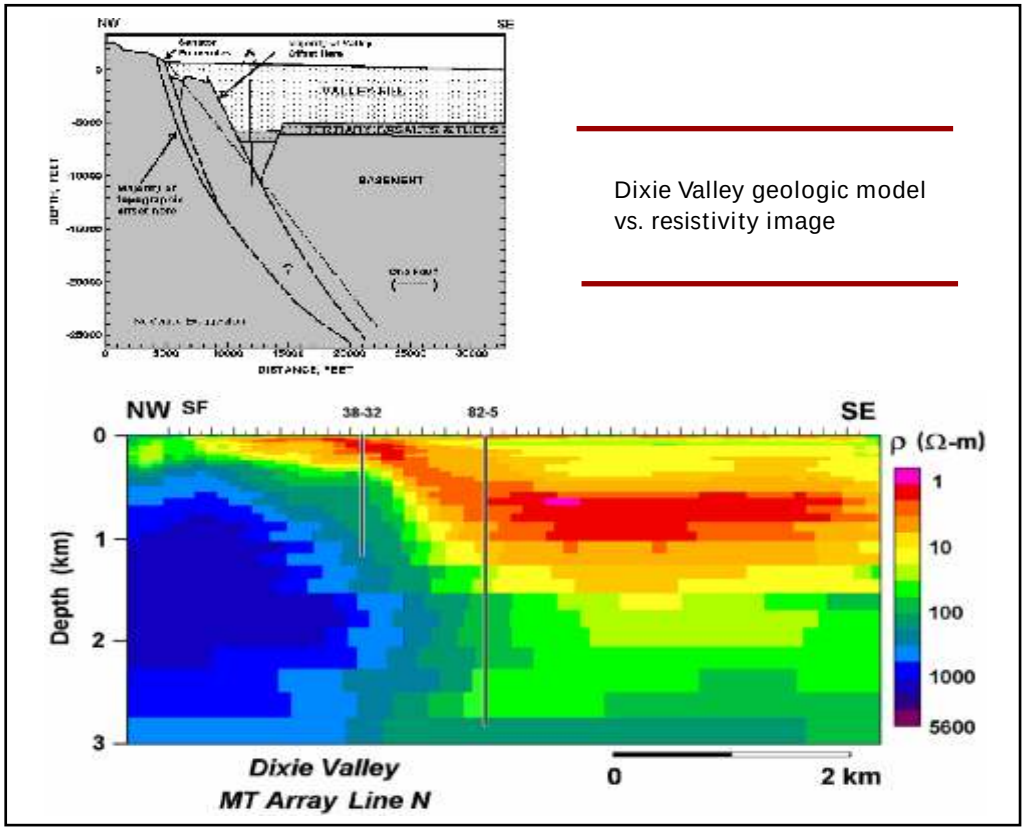
## OIL & GAS APPLICATIONS:

Traditionally, MT technology has been used to provide a means of determining the thickness of overlying volcanic or crystalline rock, which hinders the ability of seismic to map the subsurface. Deep resistivity can provide a means of discriminating between various seismic traps, for example water filled versus gas filled, since the water represents a much greater conductivity. This discrimination provides cost savings for deep drilling programs.

## Structural Mapping

Electrical resistivity can be strongly affected by geothermal processes. Historically, subsurface resistivity images are lacking in resolution due to limited data type, poor data sampling and inadequate inversion approaches. MT signals are small in amplitude and require careful processing to achieve accurate response functions. The Spartan MT system uses proprietary inversion software developed by Phil Wannamaker, providing better tools, methods and data.

Below, initial results of a Spartan MT survey at the Dixie Valley geothermal field in NW Nevada, within the fields of late Cenozoic volcanism. MT resistivity image corresponds well with geologic model.




Dixie Valley geologic model vs. resistivity image

## About Quantec

**Quantec Geoscience Ltd.** has been helping with discovery for over 20 years.

Our offices throughout the world allow access to a collective knowledge database of thousands of projects with practically all possible geophysical surveys.

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SPARTAN MT DEEP RESISTIVITY

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