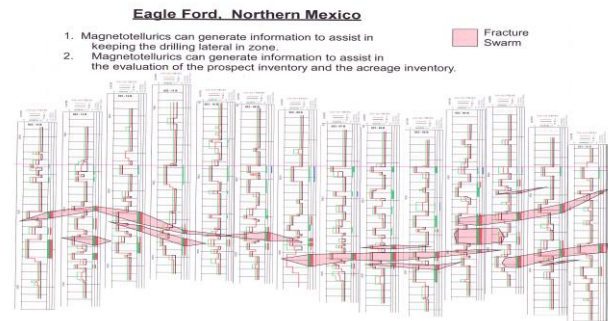
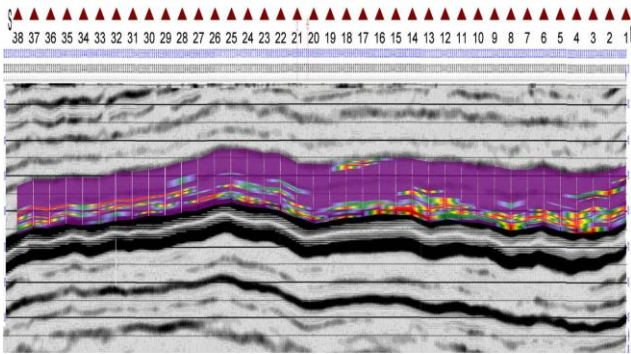


## DIGITAL MAGNETOTELLURIC TECHNOLOGIES, DMT

Continue to profit in spite of today's prices by optimizing placement of laterals using DMT's non-invasive portable Z-SCAN high resolution Magnetotelluric imaging system. DMT has used its 23 years of petroleum exploration experience, **recommending over 334 wells on five continents of which 161 have been successful**, to develop a methodology for high grading horizontal laterals. Since 2010, we have enjoyed an **economic success rate of 95%** in predicting good to excellent horizontal well performance by pre-drill tabulation of the maximum area of **hydrocarbon filled natural fractures** along the planned laterals. A predrill Z-SCAN study of tight oil sand laterals in the Permian Basin yielded economic success in 16 horizontal wells, and saved millions in drilling costs on several non-consented poor wells. A 3-mile profile of the Eagle Ford in Mexico for PEMEX elucidated fracture swarm patterns, later borne out by drilling. Below is the Mexican Z-SCAN example, as a seismic overlay and cross section. SPE paper 162125 with details is available.



Z-SCAN antennae measure the natural electromagnetic (EM) field at the surface. The Z-SCAN uses the resistivity derived from the EM data to identify fracture porosity and the phase of the EM data to identify the fluids filling the fractures. Our technology uses no induced currents, utilizing receivers only. The equipment is lightweight, and easily foot-portable for access to difficult terrain. There are no permitting costs.

The methodology requires a preliminary review of existing best-case and worst-case horizontal wells via 330' spaced stations along their laterals in each area. Comparative analysis of prospective laterals can then be achieved allowing ranking of prospective horizontals from "best case" to "worse case". Results are presented in log format; cross-sections can be constructed illustrating "sweet spot" hydrocarbon filled fracture swarms. These swarm patterns are a guide to staying in the prime target and avoiding water zones. 3-D Z-SCAN surveys can be employed to map lineaments, trends and other important factors to facilitate directing of drilling programs onto optimal acreage. Z-SCAN depth accuracy is +/-25' to 12,000' depth. Horizontal accuracy is .005 X depth.

**Highly cost-effective;** once a study model is developed, a single lateral can be typically evaluated for less than \$6,500; a 3-D analysis of a full 640 Ac section typically costs less than \$ 27,000, both plus mobilization. Please call to discuss the Z-SCAN Technology and/or your project. We will be happy to develop a Z-SCAN "Scope of Work" and "Cost Estimate". Contact:

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