

Gee Whiz Geophysics...But What About the Log Data?

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Geologists and geophysicists have been trying to squeeze as much usable information as possible from seismic data since before the discovery of bright spots. Today they display this information with 3D visualization software and 3D seismic is touted as the answer to all things....but what about the log data?

Most log data (even older log data) has 10-25 times better vertical resolution seismic data. However, many geologists and geophysicists today treat log data much like it was treated in 1935. They obtain copies of the logs, display them in cross sections, correlate them, and map them. Mixed-vintage, incomplete, and/or poor quality log data however, can lead to serious problems in interpretation. Without accurate, normalized, high-resolution log data for every well in a study area, geological correlations and maps may be incorrect. As a result, 3D seismic interpretations based on this data may turn out to be amazingly colorful but inaccurate representations of what is actually happening in the subsurface.

Today the oil and gas industry is challenged with evaluating declining production in aging fields which could involve hundreds of wells with log data recorded from 1935 to last week. New plays often involve laminated, poor-quality, low permeability, fractured, or unconventional reservoirs. Using resistivity and SP inversion processing and neural network modeling run on their PC, geologists and geophysicists can generate complete suites of accurate, high-resolution, edited, log, core, and production data for every well in a study area. Examples from the Mid-Continent, California and Rocky Mountains will be shown.