



Figure 1: Shallow Sand Thickness (left) Temperatures (right)

Mining Existing Production Databases

TMI-03 is about using and data mining existing databases as an exploration approach. Specifically, DRC has identified a production database, Significant Oil and Gas Fields of North America, which can be used to identify Play Fairway exploration trends. In many places in the world, and specifically in the lower 48 states of the United States, there are extensive databases describing wells, formation tops, production histories, hydrocarbon chemistry, depth of penetration, density of sediments, lithologies, temperatures, pressures, production histories, etc. Nehring Associates has spent the last 30 years maintaining and updating a database of 86 production parameters (see <http://www.nehringdatabase.com>) for the significant oil and gas fields. DRC has developed techniques for taking this data and creating trend maps like those shown in Figure 1. The left image in this figure shows the sand thickness for Potential Zone 1, a shallow exploration interval. The right image shows the bottom hole temperature from all of the wells on the Texas Shelf (from a different database) upward continued to 6,000 feet depth. The parameters recorded in available databases were classified as being related to Basic Engineering, Basic Physics, or Basic Geology and were mapped using a grid based computer mapping system. The advantage of this is that grid cells can be added, subtracted, divided, and multiplied in order to relate different attributes together. Properly selecting the calculations to perform enables trend analysis and pattern finding which defines Play Fairways and highlights areas to look for exploration opportunities.

DRC proposes an investment of \$500,000 to purchase The Nehring Database and to make Play Fairway Maps. These trend maps can be sold, or they can be used in DRC's exploration work. DRC has developed a good working relationship with Richard Nehring over the last decade, and he would work with DRC to specify and prioritize exploration plays. Because Richard is so intimately tied into the database, and has been for 30 years, he has a unique knowledge of what exploration plays have worked and what exploration plays have not been completely exploited. H. Roice Nelson Jr. would be the technical team leader on this project, and would work very closely with Richard Nehring to optimize results.

Richard's experience can be used to put together similar databases for National Oil Companies (NOCs), and to put in place data mining technologies which will allow these databases to be of significant exploration value inside NOCs.