© Houston Geological Society, 2007 - Countdown to the 21st Century Houston Geological Society Technical Symposium, March 31, 1998

The Fundamentals of 3-D Seismic Volume Visualization

By

Gerald Kidd, Paradigm Geophysical, Houston, Texas

Since the early 1980's the volume of 3-D seismic data has been steadily growing. Beyond the increase in the size and numbers of 3-D seismic surveys, there is also a proliferation in the number of attribute versions of any 3-D volume. This increase in the amount of data to be evaluated places demands on the interpreter that cannot be met using traditional, section-based, interpretation methods. A key pathway to solving this problem is the application of the new 3-D volume-visualization technologies. This new approach to interpretation enables the explorationist to extract the bulk of geologic information while satisfying the demand's of the modern rapid turn-around business environment.

In this presentation I introduce the fundamentals of visualization technology. I describe and distinguish the types of visualization technologies currently available and discuss visualization strategies appropriate to specific 3-D interpretation problems such as complex structure stratigraphic and amplitude interpretation. In addition, the application of this technology to different data types such as multiple attribute volumes, acoustic impedance data, and even core data, are presented. The overall purpose is to demonstrate the benefit of volume-visualization: maximizing the amount of information extracted, in the most time efficient manner.