MEETINGS

INTERNATIONAL EXPLORATIONIST GROUP EVENING MEETING—MARCH 18, 1987

PETER R. VAIL—Biographical Sketch

Peter R. Vail received his AB from Dartmouth College in 1952. He attended Northwestern University from 1952-56 where he received his M.S. and Ph.D.

In July, 1986, Dr. Vail was appointed the W. Maurice Ewing Professor of Oceanography at Rice University. Until August 1, 1986, Dr. Vail was a Senior Research Scientist with Exxon Production Research Company, the highest attainable technical position at Exxon's Houston-based research affiliate. He began his Exxon career in 1956 as a research geologist with the Research Division of Carter Oil Company, a predecessor company to Exxon Production Research. He has conducted research in stratigraphic mapping, well log correlation, computer applications to geology, the stratigraphic and structural interpretation of seismic data, and the sequence stratigraphy of outcrops and well logs.

Dr. Vail is widely known for his pioneering efforts in seismic stratigraphic interpretation. His ideas have formed the basis for the development of the seismic stratigraphic techniques that are currently in use today. His publications on seismic stratigraphy, worldwide sea-level changes, and tectonics, have contributed significantly to the general understanding of sedimentary processes and their influence on the generation, migration, and entrapment of hydrocarbons.

During 1975-76, Dr. Vail served as an AAPG Distinguished Lecturer. In 1976, he was recipient of the SEG Virgil Kaufman Gold Medal for the advancement of the science of geophysical exploration. In 1981, Dr. Vail was co-recipient of the AAPG's Matson Award for author of best paper delivered at the 1980 Annual Convention. In 1986, Dr. Vail was awarded the William Smith Medal from the Geological Society of London.

THE NEW STRATIGRAPHY*

Since the beginning of this century, there have been several attempts to link the physical stratigraphy of different regions with a unifying concept. One such concept, first proposed by Edward Sousse, was that physical stratigraphy was linked to synchronous transgressions and regressions of the shoreline, caused by global changes of sea level. He called this eustacy. Despite the attractiveness of this concept, it and other concepts failed the test of detailed analysis. Without a unifying concept of global stratigraphy, each basin has to be considered individually in terms of the lithofacies distribution. This lack of a global stratigraphy concept lead to the general belief that stratigraphy was controlled by local factors, thus many universities stopped teaching physical stratigraphy, and concentrated on sedimentation and paleontology. We now believe that seismic stratigraphy provides a method for developing a unifying concept of global stratigraphy that we call sequence stratigraphy - the new stratigraphy.

Sequence stratigraphy has revolutionized the way sedimentary rocks are subdivided, correlated and mapped. It is a new way to group rocks into chronostratigraphically constrained genetic intervals. These intervals, called depositional sequences and systems tracts, have predictable stratal patterns and lithofacies. They can be recognized in outcrop, on well logs and, if thick enough, on seismic sections. Thus, provide a new way to establish a stratigraphic framework ahead of the drill. They correlate throughout basins and probably globally. Reservoir, source, and seal rocks are associated with particular types of systems tracts. Sequence boundaries are major hydrocarbon migration pathways. A knowledge of sequence stratigraphy concepts and procedures has the potential to significantly improve the ability to locate reservoirs within structural traps, predict stratigraphic traps, and identify source rocks ahead of the drill.

Seismic, well, and outcrop data from the Permian Delaware Basin and the Guadalupe Mountains in western Texas and southeastern New Mexico are used to document and demonstrate the application of this concept.

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