

AAPG Studies in Geology #37 "Source Rocks in a Sequence Stratigraphic Framework"

edited by **Barry J. Katz and Lisa M. Pratt**, published by the American Association of Petroleum Geologists, Tulsa, Oklahoma, USA, printed in the USA, ISBN 0-89181-045-5.

Review by Christopher G. Kendall

This book consists of 14 chapters representing the papers are from several oral and poster sessions which were presented at the 1991 Annual Convention of the AAPG. The main body of this volume is composed of papers which focus on petroleum source rocks and then tie them to a sequence stratigraphic framework. Within this theme, some of the papers also describe various aspects of petroleum development, including problems currently facing petroleum geochemists, including variability within source rock systems, geochemical variability of sedimentary organic matter, hydrocarbon production as a function of depositional setting, and the relationship between the accumulation of organic matter and sea level.

Listed in order of topics, papers include variability of source rocks; geochemical and micropaleontological characterization of lacustrine and marine hypersaline environments from Brazilian sedimentary basins; the sequence stratigraphy of transgressive black shales; sedimentology of organic matter in upper Tithonian-Berriasian deep-sea carbonates of southeast France; variation of the distribution of organic matter within a transgressive system tract, characterization of the source horizons within the late Cretaceous transgressive sequence of Egypt; types and thermal maturity of organic matter accumulated during early Cretaceous subsidence of the Exmouth plateau, northwest Australian margin; sea level changes, anoxic conditions, organic matter enrichment, and petroleum source rock potential of the Cretaceous sequences of the Cauvery basin, India; petroleum source rock potential of Mesozoic condensed section deposits of Southwest Alabama; internal stratigraphy and organic facies of the Devonian-Mississippian Chattanooga shale in Oklahoma and Kansas; source quality variations tied to sequence development in the Monterey and associated formations, southwestern California; Paleoceanographic interpretation of variations in the Sulfur Isotopic compositions and Mn/Fe ratios in the Miocene Monterey formation, Santa Maria Basin, California; and finally sequence stratigraphic significance of organic matter variations: example from the upper Cretaceous Mancos shale of the San Juan basin, New Mexico.

This book is illustrated with numerous graphs, depositional models, block diagrams, well logs and descriptions, aerial photographs, and diagrams graphing the relationship between the sedimentary stratigraphy and sea level. This book provides important information on the source rocks and their relationship to sequence stratigraphy and it attempts to tie geological sections which contain source rock materials to the eustatic sea level curves put together by Haq et al. It is amazing to me how the sequence stratigraphic concepts pioneered by Vail and others have changed our view of stratigraphy. This book is an example of how far reaching this influence has become with its investigation of source rock potential and sea level history. The book is professionally put together and well edited by Katz and Pratt. It is illustrated with numerous case examples which demonstrate the relationship of source rocks to transgressive eustatic events. In fact, the overwhelming consensus of the papers is that source rock sediments accumulated during the transgressive phase of a sea level rise.

Geophysicists, geologists, and geochemists will probably refer to this book for some time to come. The diagrams are clear and the writing is short and to the point and the photographs are excellent. AAPG has done it once more with the production of a really excellent book.