INTERNATIONAL EXPLORATIONISTS DINNER MEETING—MAY 18, 1988

KURT W. RUDOLPH—Biographical Sketch

Kurt William Rudolph received his Bachelor of Science degree in geology from Rensselaer Polytechnic Institute in Troy, New York, in 1976. In 1978 he received his Master of Arts degree in geology from the University of Texas at Austin. His Master's thesis dealt with the diagenesis of back-reef carbonates from the Capitan complex of the Guadalupe Mountains. From 1978 to 1981 he worked for Union Oil of California in Jackson, Mississippi, as an exploration geologist. He joined Exxon Production Research Company in 1981, where he currently holds the position of Senior Research Specialist. Among his interests are carbonate stratigraphy, sequence analysis, seismic modeling, and the influence of tectonics on sedimentation.

Versions of this talk were presented at the International Symposium on Petroleum Exploration in Carbonates in Nanjing, China, in November 1986 and at the SEPM Convention in Los Angeles in June 1987.

PLATFORM EVOLUTION AND SEQUENCE STRATIGRAPHY OF THE NATUNA PLATFORM, SOUTH CHINA SEA*

By integrating seismic, well-log, and core data into a sequence framework, seven complete depositional sequences are recognized in the Miocene age Terumbu Formation carbonates of the Natuna Platform, South China Sea. Each sequence consists of a lowstand systems tract, a transgressive systems tract and condensed section, and a highstand systems tract.

Terumbu carbonates display a downward shift of reservoir facies in the lowstand systems tract, deepen upward (retrograde) in the transgressive systems tract, and shoal upward (prograde) in the highstand systems tract. At each sequence boundary, there is erosional truncation of the platform margin and upper slope and exposure of the platform crest.

The highest porosity occurs in grain-prone shoal water carbonates of the late highstand systems tract on the platform crest. Porosity also occurs downdip from the platform crest in the onlapping lowstand systems tract. Sequence stratigraphy, seismic facies, and seismic modeling analysis are used to map and predict reservoir distribution on the Natuna Platform.

Increased subsidence from the Middle Miocene onward caused the retreat of the Natuna Platform. Retreat occurred in an asymmetric fashion with more retreat on the west, or low-productivity, shelfward side of the platform. Platform retreat occurred incrementally, during deposition of transgressive systems tracts and the condensed sections. The large eustatic sea level rise in the early Pliocene, combined with continued rapid subsidence, drowned the platform and ended carbonate production.

●*With Patrick J. Lehmann*