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Barry J Katz¹, Gary E Ehret² (1) ChevronTexaco, Bellaire, TX (2) ChevronTexaco, Lagos, Nigeria

Charge Aspects Of The Petroleum Systems of Italy

Approximately 2.5 billion barrels of oil have been discovered on- and offshore Italy. An extensive field program conducted in association with detailed analysis of seeped hydrocarbons and reservoir oils reveals the presence of a number of possible source rocks ranging in age from Middle Triassic to Oligo-Miocene. The generation potential of some of these units can be both significant as a result of their organic richness, source quality, and net thickness. For example, within the Upper Triassic a 20 meter net thick source interval with an average generation potential of 30 mg HC/g rock was observed. Not all of these organic-rich intervals are significant because of their limited net thickness (e.g., the Cenomanian-Turnoian - "Bonarelli Event"). These organic-rich intervals were deposited within both shallow-water intraplatformal and deep-water inter-platformal settings.

An examination of the oils suggests that two mega-families exist. The first is an isotopically light group associated with Triassic source rocks in northern Italy, Sicily, peninsular Italy as well as in the offshore (e.g., Malossa and Rospo Mare). The second group includes isotopically heavier oils from northern Italy and the Southern Apennines (e.g., Tempa Rosa and Monte Alpi). The majority of the isotopically heavier oils appear to have a Cretaceous affinity, although a small percentage of these oils may have a Tertiary source (e.g., Cortemaggiore). These mega-families can be subdivided based on both geographic and geochemical (biomarker) considerations.

Thermal maturity is another key aspect associated with charge. Significant amounts of generation appear due to tectonic overburden as a result of thrusting. This results in a much more punctuated generation history than commonly observed.