

## Paper 45

**Oil, geology, and changing concepts in the Southwest Philippines (Palawan and the Sulu Sea)**

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The Southwest Philippines; Palawan, its offshore shelves, Reed Bank, and the southwestern Sulu Sea encompass 350,000 km<sup>2</sup> (126,000 sq. mi.). This region contains the better areas to search for significant oil and gas deposits in the Philippines.

The largest oil field yet found in the Philippines was discovered and confirmed in 1991-1992. West Linapacan field has a resource range of 50 million to 200 million barrels of oil. Other recent discoveries of potential significance are Octon and the Calauit-Calauit South fields with resource potentials in the range of 20 to 50 million barrels recoverable. A significant, but as yet unevaluated in terms of long term production testing is the 1992 discovery at Shell's Malapaya-1. This is a deep water test with a reported hydrocarbon column of several hundred feet.

The Southwest Philippines' oil producing trend, about 40 km off the northwest coasts of Palawan and Busuanga is a northerly trending belt 200 km in length. Oil reservoirs in the Philippines fields are Oligocene to Lower Miocene platform limestones, reefs and both silicic and carbonate turbidite sequences. A 540 km gap occurs between the Philippines production at Nido and the closest oil fields to the southwest in Sabah. Untested prospects and leads are present along the South China Sea coast of Palawan.

The Southwest Sulu Sea overlies three poorly explored Tertiary sedimentary-structural basins (Balabae, Bancauan, and Sandakan basins). Geology and oil shows suggest the possible presence of commercial oil fields. Prospects and prospect leads are numerous. One well in the Malaysia sector of the Sulu Sea (Nympe Norde 1) suggests economic potential.

Deep-water exploration targets (untested reefs and structural traps) are present in the South China Sea offshore Palawan. Large gas-condensate reserves are indicated at Camago in 2700 feet of water. A recent test of a major deep water reef prospect, Sarap-1, provided an exploration disappointment in 1991. Other reefs (Cliff Head) in deep water with better source rock association remain to be tested.

Besides economic interest, the Southwest Philippines has been the spawning ground of several concepts and theories about the origin and evolution of the overall region. Some theories and concepts are reviewed. The "Ulugan Bay Fault" is disputed and recommended for elimination from future maps based on later field work and offshore geophysical studies. Redefinition as an anomalous area is alternative.

Two schools of thought on the origin of much of Palawan are reviewed. Was continental crust from the South China Sea

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area subducted beneath Palawan or is Palawan a complicated type of thrust pile composed of protocrust types that have been thrust to the northwest from the Sulu Sea region?

Some future exploration areas, plays, and prospects are illustrated.

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