Paper 40

New targets for oil and gas exploration in Fiji, Solomon Islands and Vanuatu

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New work by SOPAC has shown that the same Tertiary reefal carbonates forming reservoirs for oil and gas in South East Asia are valid for hydrocarbon exploration in the arc-related basins of the South Pacific.

Earlier work by regional development organisations and by the oil industry in the 1970's and 1980's showed that the arc-related basins contained sediment thicknesses in excess of 5 km ranging in age from Oligocene to Recent. However, the basins were thought to have marginal hydrocarbon potential owing to the lack of knowledge regarding reservoirs and source rocks.

The new study shows that the growth of Miocene and Pliocene reefal carbonates exposed on the islands is closely related to eustatic sea-level changes. Consequently, reef development in shallow water conditions may have been far more widespread than was previously thought. This is supported by new, reprocessed seismic data from the offshore basins which has revealed the presence of numerous possible reefal build-ups and resedimented mounds of similar age to the onshore Tertiary reefs. These features provide new targets for oil and gas exploration.

The hydrocarbon potential has been further improved by source rock studies. Source rocks for oil and gas (kerogen types II and III) have been sampled in Fiji and Vanuatu. Indeed the likelihood that oil has been generated in the offshore basins is confirmed by oil seeps and shows in neighbouring Tonga and in offshore Fiji. Source rock maturation modelling suggests that the top of the oil window is currently at a depth of 2-3 km.

The new reefal exploration targets and source rock potential considerably enhance the hydrocarbon prospectivity of the region.

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