

Integrated Petroleum System Analysis of Northwest Palawan, Philippines

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Over the past 30 years, the offshore NW Palawan area has been extensively explored, leading to the discovery of the giant Malampaya gas-field in 1992 and a number of smaller oil and gas fields. However, despite these discoveries several dry wells have been drilled, which warranted a thorough re-evaluation of this geologically complex hydrocarbon province.

An essential part of a multi-disciplinary project into the remaining exploration prospectivity of the NW Palawan area was the evaluation of geochemistry data and the creation of a hydrocarbon charge model. All these results were integrated into Shell's prospect portfolio.

From the geochemistry data it was concluded that there are some 4 different hydrocarbon families originating from different source rocks and that in almost every well mixing of these families is observed. The major Malampaya-type hydrocarbon family has a much larger regional distribution than previously known, as is evidenced by detailed biomarker analysis and compound specific isotope data on oil samples, and the isotopic composition of hydrocarbons that were trapped in fluid inclusions samples obtained from dry wells situated further outboard.

The basin modelling highlights the hydrocarbon charge history of the area. Accurate prediction of fluid properties reduces the exploration risk in the area. The models suggest that most traps will be charged with hydrocarbons, but since many traps have a fairly small drainage area, there is a risk of undercharging some of the structures in the region.