

Integrated technical approach and results of the Tiong-Kepong joint resources study

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The Joint Resource Study (JRS), a combined effort by Petronas, Petronas Carigali, and Esso Production Malaysia Inc., was initiated in 1993 to create a multidisciplinary team approach to determining remaining potential and optimal reservoir depletion plans for twelve oil fields in the Malay Basin. Integrated technical teams comprising of professionals from the three companies systematically upgraded the technical understanding of each major reservoir in the twelve fields with application of the latest geoscience technology.

Tiong and Kepong field, located in the south-eastern part of the Malay Basin approximately 260 km east of Kerteh, were studied by a JRS multidisciplinary team to assess the potential of undrained hydrocarbons, and reservoir engineering data to delineate prospective reserves in a stratigraphic trap in the marginal marine J-18/19 reservoirs. A seismic amplitude anomaly in the saddle between Tiong and Kepong field highlighted the need for an integrated study. Detailed interpretation of recently acquired and existing 2D seismic data established an area of strong amplitude response and allowed reservoir thickness prediction based on isochronal mapping. Seismic modelling supported a correlation of strong seismic amplitude with thick, high-quality hydrocarbon filled sand. A strong Amplitude vs. Offset (AVO) seismic response was also seen in the target interval. Core data was integrated with well log expression to help build a detailed geologic facies model in the context of the regional sequence stratigraphic framework. A through understanding of the distribution and sealing nature of interbedded shales within the J-series was also required to ensure the production from existing wells in Tiong field which is from the underlying J-20/21 reservoir unit, which was initiated in 1983, had not drained the prospective area. An upcoming well will test the integrated model that the JRS team has created and confirm the viability of a proposed development program.
