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INTEGRATED APPROACH RESERVOIR GEOLOGY MODEL USING SEISMIC 3-D AND WELL DATA A CASE STUDY: RANTAU FIELD

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ABSTRACT

The paper discusses establishing a reservoir geology model for part of the Rantau Field utilizing two methods. The first method is based on a model utilizing log data only, while the second model utilizes a combination of 3-D seismic and log data. Based on well log correlations and 3-D seismic amplitude, and by applying geostatics, the reservoir properties were mapped.

Rantau Oil Field is located on an anticlinal structure in the Keutapang Formation. The field covers an area of 20 square km. Since discovery, more than 50 years ago, 550 wells have been drilled to develop the field. Old log data and some new log data were available for this study.

In the course of establishing an accurate reservoir geological model as input for reservoir simulation, a 3-D seismic survey was conducted, processed, and interpreted during 1993 - 1994. This method produced better results than previous reservoir modeling efforts.

Petrophysical properties of the reservoir were mapped using seismic amplitude and well log data. Fault patterns from the seismic interpretation were consistent with the faults established utilizing log data. These faults were responsible for production anomalies in some wells. Potential areas were identified which can be used for workover and injection wells for future development. The reservoir geology model established in this way yields a more accurate and realistic interpretation of the reservoir.

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