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RESERVOIR SIMULATION STUDY OF THE PASIRJADI FIELD

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ABSTRACT

Reservoir simulation is the one of many effective techniques used in reservoir management. Reservoir simulation is a process of modeling physical properties and reservoir performance using a mathematical approach. The accuracy of the simulation results depends upon the quality of the input to the simulator and not necessarily upon the sophistication of the model. In general, the reservoir simulation process can be divided into three main phases: input data gathering, history matching and performance prediction.

In this reservoir simulation study of the Pasirjadi Field, the main objective is to understand more clearly reservoir performance and reservoir potential, and to characterize the field at initial, present and future conditions. The specific numerical simulator used was the Black Oil Model Eclipse-100 new version, 94-A.

The Pasirjadi Field is located about 20 km south of Subang and 120 km from Cirebon. It is one of many fields managed by Pertamina UEP III Karang Ampel. The field is presently producing from the Parigi Formation which is a limestone reservoir.

Gas production is 14.426 MMSCFD from 9 wells, average pressure is approximately 62 bars (899 psi), and cumulative production to December 1993 was 9.1 BSCF. The reservoir model is 30 X 30 X 4, using a three dimensional, one phase, bottom aquifer and irregular grid system.

In the history matching process, the variables which are matched include original gas in place, water production rate and cumulative water production from each well and for the full field, static pressure and flowing pressure. The history matched reservoir model will then be used to predict the results of various reservoir development activities such as infill drilling and perforation of additional zones. Another use will be to help predict when gas compression will be required.

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