RINGKASAN

PENERAPAN METODE *MATERIAL BALANCE* DALAM PENENTUAN *DRIVE MECHANISM* UNTUK EVALUASI CADANGAN SISA PADA SUMUR GAS LAPANGAN "IR"

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Penelitian ini dilakukan pada Lapisan IR – 3390 di Lapangan "IR" yang berada di Cekungan Sumatera Tengah, Provinsi Riau, dengan tujuan menentukan jenis *drive mechanism* yang bekerja serta mengevaluasi besarnya cadangan sisa gas menggunakan metode *material balance*.

Metode yang digunakan dalam penelitian ini meliputi analisis *material balance* menggunakan metode P/Z terhadap kumulatif produksi gas (Gp) serta simulasi reservoir dengan *software* IPM MBAL 10.5. Data yang digunakan mencakup tekanan reservoir, data produksi gas, data PVT, serta data geologi pendukung. Analisa *drive mechanism* dilakukan berdasarkan plot P/Z vs Gp dan hasil *energy plot* dari simulator.

Hasil analisa menunjukkan Lapisan IR – 3390 memiliki mekanisme pendorong berupa *water drive*. Nilai OGIP yang diperoleh dari metode P/Z dan simulasi MBAL menunjukkan hasil yang relatif sama. Selanjutnya dilakukan perhitungan *recovery factor*, *ultimate recovery*, dan cadangan gas sisa.

Kata kunci : *material balance*, P/Z, *drive mechanism*, *original gas in place*, cadangan gas sisa.

ABSTRACK

APPLICATION OF THE MATERIAL BALANCE METHOD IN DETERMINING THE DRIVE MECHANISM FOR EVALUATING RESIDUAL RESERVES IN THE "IR" FIELD GAS WELL

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This study was conducted on the IR – 3390 layer in the "IR" field located in the Central Sumatera Basin, Riau Province, with the aim of determining the type of drive mechanism at work and evaluating the amount of remaining gas reserves using the material balance method.

The methods used in this study included material balance analysis using the P/Z method on cumulative gas production (Gp) and reservoir simulation using IPM MBAL 10.5 software. The data used included reservoir pressure, gas production data, PVT data, and supporting geological data. Drive mechanism analysis was performed based on the P/Z vs Gp plot and the energy plot results from the simulator.

The analysis results show that the IR – 3390 layer has a water drive mechanism. The OGIP values obtained form P/Z method and MBAL simulation show relatively similar result. Next, the recovery factor, ultimate recovery, and remaining gas reserves were calculated.

Keywords: material balance, P/Z, drive mechanism, original gas in place, remaining reserves.