

RINGKASAN

PENENTUAN MODEL *WATER INFLUX* DAN *ESTIMATED REMAINING RESERVE* MENGGUNAKAN METODE *MATERIAL BALANCE* PADA RESERVOIR MINYAK “AW” LAPANGAN “BOWS”

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Seiring diproduksikannya minyak, cadangan minyak yang terdapat di reservoir akan semakin berkurang jumlahnya disertai dengan tekanan reservoir yang semakin mengalami penurunan. Berdasarkan hal tersebut, perlu dilakukan analisa perilaku reservoir untuk mengetahui jumlah *estimated remaining reserve* yang masih dapat diproduksi secara komersial pada kondisi saat ini menggunakan metode *material balance Havlena – Odeh* pada Reservoir Minyak “AW” Lapangan “BOWS”.

Tahap awal dalam melakukan analisa dengan mengidentifikasi data produksi, tekanan, PVT, penunjang, dan *original oil in place* metode volumetrik. Selanjutnya melakukan pengolahan data dengan menentukan jenis *drive mechanism* metode *drive index* dan *campbell plot*. Tahapan selanjutnya menentukan nilai *original oil in place* metode *material balance* dengan penyesuaian *water influx material balance*. Penentuan model *water influx* dilakukan dengan pendekatan *Schilthuis* dan *Van Everdingen – Hurst* yang selaras terhadap *water influx material balance*. Selanjutnya menentukan nilai *original oil in place* metode *material balance* dengan penyesuaian *water influx* model. Tahapan selanjutnya menentukan nilai *recovery factor* dengan metode *Gutherie – Greenberger* serta menentukan nilai *estimate ultimate recovery* dengan melakukan perkalian nilai *recovery factor* dengan *original oil in place*. Penentuan nilai *estimated remaining reserve* diperoleh dengan melakukan pengurangan nilai *estimated ultimate recovery* dengan kumulatif produksi minyak pada waktu produksi terakhir.

Hasil penentuan model *water influx* diperoleh pada aliran *unsteady state* pendekatan *Van Everdingen – Hurst* pada *rD finite* 10 A sebesar 4 1/tahun dengan nilai *original oil in place* penyesuaian *water influx* model sebesar 18 MMSTB dan *recovery factor* sebesar 66.64% sehingga diperoleh nilai *estimated remaining reserve* sebesar 8.42 MMSTB.

Kata Kunci: *water influx, original oil in place, estimated remaining reserve.*

ABSTRACT

DETERMINATION OF WATER INFLUX MODEL AND ESTIMATED REMAINING RESERVES USING THE MATERIAL BALANCE METHOD IN THE "AW" OIL RESERVOIR "BOWS" FIELD.

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Along with the production of oil, oil reserves in the reservoir will decrease in number accompanied by a decrease in reservoir pressure. Based on these, reservoir behavior analysis is required to find out the amount of the estimated remaining reserve which can still be produced commercially at the current state using the material balance Havlena - Odeh method in the Oil Reservoir "AW" Field "BOWS".

The early stage on conducting the analysis by identifying production, pressure, PVT, support, and original oil in place volumetric method. Then perform data processing by determining the type of drive mechanism with drive index and Campbell plot method. The next step is to determine the value of the original oil in place using the material balance method by adjusting the water influx material balance. Determination of the water influx model was carried out using the Schilthuis and Van Everdingen – Hurst approach which is aligned with the water influx material balance. Then determine the value of the original oil in place using the material balance method by adjusting the water influx model. The next step is to determine the value of recovery factor with the Gutherie – Greenberger method and determine the value of estimated ultimate recovery by multiplying the recovery factor value with the original oil in place. Determination of the value of the estimated remaining reserve is obtained by reduce the value of the estimated ultimate recovery with cumulative oil production at the time of the last production.

The results of determining the water influx model obtained in the unsteady state aquifer of the Van Everdingen – Hurst approach at rD of finite 10 A of 4 1/year with the original oil in place value adjusted for the water influx model of 18 MMSTB and a recovery factor of 66.64% so obtained the value of estimated remaining reserve is 8.42 MMSTB.

Key Words: water influx, original oil in place, estimated remaining reserve.