RINGKASAN

PENENTUAN KARAKTERISTIK RESERVOIR BERDASARKAN HASIL ANALISIS *PRESSURE BUILD UP TEST*

PADA SUMUR "AA-01" LAPANGAN XTRA

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Sumur "AA-01" Lapangan XTRA merupakan sumur yang akan dilakukan pengembangan lanjutan. Untuk itu, dilakukan pengujian sumur menggunakan EMR agar diketahui karakteristik reservoir dan produktivitas dari sumur AA-01. Berdasarkan pembacaan EMR, dilakukan pengujian produksi dengan lama waktu produksi 8 jam dengan *rate* 2043 BPD dan waktu penutupan sumur selama 72 jam. Tujuan *test* ini dilakukan adalah untuk menentukan parameter-parameter karakteristik reservoir, seperti Tekanan reservoir (P*), *skin* (S), radius investigasi, *flow efficiency* (FE) serta penentuan model reservoir dan model batas reservoir.

Metode yang digunakan pada studi ini menggunakan *pressure build-up* perhitungan manual dan menggunakan simulator *Ecrin v4.02*. Pengujian ini dilakukan dengan cara memproduksikan sumur dengan selang waktu tertentu dan laju alir konstan, kemudian sumur ditutup untuk waktu tertentu. Ketika dilakukan penutupan sumur, tekanan alir dasar sumur akan mengalami kenaikan kemudian akan dicatat sebagai fungsi waktu. Hasil pencatatan inilah yang digunakan untuk analisis menggunakan metode Horner. Dari analisis metode Horner dengan kurva semilog yang menghasilkan parameter parameter reservoir yang ingin dicapai. Dari kurva log-log diidentifikasi efek *wellbore storage* dan *flow regime*.

Dari kedua analisis memperlihatkan adanya dua *time region* yaitu *early time* dan *middle time,* dalam hal ini pengujian hanya sampai *transient time*. Terdapat efek *wellbore storage* yang terlihat pada kurva *pressure derivative* yaitu *changing wellbore storage*, segregasi fasa, *movement gas-liquid interface*. Pada *middle time* terdeteksi adanya *radial flow* yang menyatakan periode *transient time*.Analisis simulator *Ecrin v4.02* memberikan output *well model changing wellbore storage, horizontal well,* model reservoir *homogeneous* dengan *infinite boundary*. Dengan nilai parameter hasil pengolahan dengan simulator berupa tekanan reservoir (P*) 2698,16 psia, nilai permeabilitas sebesar 1232,23 mD, skin + 71,83, radius investigasi sebesar 5470,31, nilai *productivity index* sebesar 148,59 BPD/psia, dan *flow efficiency* sebesar 0,13.

Kata kunci: *Pressure Build-Up*, Simulator *Ecrin V4.02,* Uji Sumur

ABSTRACT

DETERMINATION OF RESERVOIR CHARACTERISTICS BASED ON PRESSURE BUILD UP TEST ANALYSIS RESULTS IN WELL "AA-01" XTRA FIELD

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The XTRA Field "AA-01" well is a well that will be subject to further development. For this reason, a well test using EMR was conducted to determine the reservoir characteristics and productivity of the AA-01 well. Based on the EMR reading, a production test was conducted with a production time of 8 hours with a rate of 2043 BPD and a well closure time of 72 hours. The purpose of this test is to determine the parameters of reservoir characteristics, such as reservoir pressure (P*), skin (S), investigation radius, flow efficiency (FE) as well as determining the reservoir model and reservoir boundary model.

The method used in this study is manual pressure build-up calculation and using Ecrin v4.02 simulator. This test is conducted by producing the well with a certain time interval and constant flow rate, then the well is closed for a certain time. When the well is closed, the well bottom flow pressure will increase and then be recorded as a function of time. The results of this recording are used for analysis using the Horner method. From the analysis of Horner's method with semilog curves that produce reservoir parameters to be achieved. From the log-log curve, the effects of wellbore storage and flow regime are identified.

Both analyses show two time regions, namely early time and middle time, in this case testing only until transient time. There is a wellbore storage effect seen in the pressure derivative curve, namely changing wellbore storage, phase segregation, gas-liquid interface movement. The analysis of Ecrin v4.02 simulator gives output well model of changing wellbore storage, horizontal well, homogeneous reservoir model with infinite boundary. With the parameter values of the processing results with the simulator in the form of reservoir pressure (P*) 2698.16 psia, permeability value of 1232.23 mD, skin + 71.83, investigation radius of 5470.31, productivity index value of 148.59 BPD/psia, and flow efficiency of 0.13.

Keywords: Pressure Build-Up, Ecrin V4.02 Simulator, Well Test