

RINGKASAN

EVALUASI PRODUKSI AIR TINGGI PADA SUMUR HFN-18 LAPANGAN “VAAL”

Oleh
Halfi Faliq Nurrakhman
NIM: 113190055
(Program Studi Sarjana Teknik Perminyakan)

Sumur HFN-18 merupakan sumur yang berproduksi di Lapangan “VAAL” PT Pertamina EP Cepu dengan nilai water cut yang tinggi sebesar 90,92% dari laju alir total sebesar 2160,2 BPD. Produksi air tinggi diperkirakan terdapat masalah sehingga perlu dievaluasi. Dalam skripsi ini evaluasi dilakukan perhitungan ulang produktivitas formasi yang terdiri dari pembuatan kurva IPR dengan metode Wiggins. Selanjutnya menentukan kurva TIP dengan menggunakan *software Pipesim*, serta evaluasi terhadap pressure drop akibat perforasi dengan menggunakan persamaan Jones, Blount dan Glaze. Selanjutnya dilakukan evaluasi *Chan Diagnostic* serta laju produksi kritis water coning dengan menggunakan metode Chierici-Ciucci dan interval perforasi optimum dengan menggunakan metode Sobocinski-cornelius dan metode Bournazel-Jeanson.

Evaluasi IPR dan TIP menggunakan metode Wiggins menunjukkan Sumur HFN-18 beroperasi pada laju alir 2160,2 BPD dan tekanan 2347,7 psi. Evaluasi *pressure drop* akibat perforasi dengan metode Jones, Blount, dan Glaze menghasilkan optimum point pada ΔP 158,25 psia dengan densitas perforasi 6 SPF. Hasil *Chan Diagnostic* menunjukkan *water coning* pada Sumur HFN-18 dengan nilai slope WOR' yang negatif. Water coning terjadi pada laju produksi di atas kritis (0,341 BOPD atau 3,76 BFPD) pada interval perforasi 10,68 ft. Evaluasi interval perforasi optimum menyarankan 1-7 ft dengan permeabilitas horizontal 1000 mD. Metode Bournazel-Jeanson merekomendasikan interval perforasi 1-3 ft dengan permeabilitas horizontal 1000 mD agar water breakthrough tidak terjadi pada Sumur HFN-18. Produksi air tinggi pada sumur HFN-18 berdasarkan evaluasi yang telah dilakukan merupakan akibat dari adanya *problem water coning*.

Kata kunci: Laju Alir, Perforasi, *Water Coning*

ABSTRACT

EVALUATION OF HIGH WATER PRODUCTION IN HFN-18 WELL OF FIELD "VAAL"

By
Halfi Faliq Nurrahman
NIM: 113190055
(Petroleum Engineering Undergraduated Program)

HFN-18 well is a well that produces in PT Pertamina EP Cepu's "VAAL" Field with a high water cut value of 90.92% of the total flow rate of 2160.2 BPD. High water production is expected to have problems so it needs to be evaluated. In this thesis, the evaluation was carried out to recalculate the productivity of the formation consisting of making the IPR curve with the Wiggins method. Next, determine the TIP curve using Pipesim software, as well as evaluate the pressure drop due to perforation using the Jones, Blount and Glaze equations. Furthermore, Chan Diagnostic evaluation and critical water coning production rate using Chierici-Ciucci method and optimum perforation interval using Sobocinski-cornelius method and Bournazel-Jeanson method were conducted.

IPR and TIP evaluation using the Wiggins method showed HFN-18 Well was operating at a flow rate of 2160.2 BPD and a pressure of 2347.7 psi. Evaluation of pressure drop due to perforation using the Jones, Blount, and Glaze methods yielded an optimum point at ΔP 158.25 psia with a perforation density of 6 SPF. Chan Diagnostic results show water coning in HFN-18 Well with negative slope WOR' value. Water coning occurs at production rates above critical (0.341 BOPD or 3.76 BFPD) at perforation intervals of 10.68 ft. Evaluation of the optimum perforation interval suggests 1-7 ft with a horizontal permeability of 1000 mD. The Bournazel-Jeanson method recommends a perforation interval of 1-3 ft with a horizontal permeability of 1000 mD to prevent water breakthrough from occurring in HFN-18 Wells. High water production in HFN-18 wells based on evaluations that have been carried out is the result of water coning problems.

Keywords: Flow Rate, Perforation, Water Coning