

RINGKASAN

EVALUASI DAN ANALISA KINERJA *MATRIX ACIDIZING* LAPISAN KARBONAT DAN BATUPASIR PADA SUMUR FH-18 & FH-36

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Sumur FH-18 dan sumur FH-36 adalah sumur produksi yang mengalami penurunan produksi akibat formation *damage* yang terjadi di *wellbore* disebabkan oleh *completion work* perforasi baru masing-masing pada interval 1794-1800 mMD & 1807-1813 mMD dan 1892-1898 mMD & 1902-1908 mMD. Untuk itu, perlu dilakukan stimulasi *matrix acidizing* dengan menginjeksikan fluida asam ke dalam formasi dengan tujuan menurunkan faktor *skin* dan meningkatkan permeabilitas batu pasir dan membentuk *wormhole* pada batuan karbonat.

Metode penelitian yang digunakan adalah metode kualitatif yaitu redesain perencanaan stimulasi *matrix acidizing* menggunakan metode William et All. Pada sumur FH-18 diinjeksikan asam dengan menggunakan desain asam CH₃COOH 10% laju injeksi maksimum 2,1 bpm, volume asam 93 bbl, dan tekanan injeksi pompa sebesar 1390,495 psi. Sedangkan pada sumur FH-36 diinjeksikan asam 7,5% HCl – 1,5% HF, laju injeksi 0,9 bpm, volume asam 93,2 bbl, tekanan injeksi pompa sebesar 1153 psi.

Hasil evaluasi dari sumur FH-18 sebelum dilakukan *matrix acidizing* memiliki laju alir minyak (Qo) sebesar 14 bopd, *Productivity Index* (PI) sebesar 0,639 bfpd/psi, *skin* sebesar (+15), dan *flow efficiency* (FE) sebesar 0,315. Laju alir minyak (Qo) setelah pelaksanaan *matrix acidizing* sebesar 45,2 bopd, *Productivity Index* (PI) sebesar 3,135 bfpd/psi, *skin* sebesar (-2,493), dan *flow efficiency* (FE) sebesar 1,547. Pada sumur FH-36, sebelum dilakukan *matrix acidizing* memiliki laju alir minyak (Qo) sebesar 0,3 bopd, *Productivity Index* (PI) sebesar 0,533 bfpd/psi, *skin* sebesar 3,582, dan *flow efficiency* (FE) sebesar 0,315. Dan setelah dilakukan *matrix acidizing*, sumur tidak menghasilkan minyak dan WC 100%. Sehingga untuk nilai *Productivity Index* (PI), *skin*, dan *flow efficiency* (FE) tidak mengalami kenaikan. Berdasarkan parameter produksi tersebut menunjukkan pelaksanaan stimulasi *matrix acidizing* pada sumur FH-18 berhasil sementara pada sumur FH-36 gagal.

Kata Kunci : *Matrix Acidizing*, Stimulasi, Karbonat, Batupasir

ABSTRACT

EVALUATION AND ANALYSIS OF MATRIX ACIDIZING PERFORMANCE OF CARBONATE AND SANDSTONE LAYERS IN FH-18 & FH-36 WELLS

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The FH-18 well and FH-36 well are production wells that experienced decreased production due to formation damage that occurred in the wellbore caused by new perforation completion work at intervals 1794-1800 mMD & 1807-1813 mMD and 1892-1898 mMD & 1902-1908 mMD respectively. For this reason, it is necessary to stimulate matrix acidizing by injecting acidic fluid into the formation with the aim of reducing the skin factor and increasing sandstone permeability and forming wormholes in carbonate rocks.

The research method used is a qualitative method, namely the redesign of matrix acidizing stimulation planning using the William method. In the FH-18 well, acid was injected using 10% CH₃COOH acid design with a maximum injection rate of 2.1 bpm, acid volume of 93 bbl, and pump injection pressure of 1390.495 psi. While in the FH-36 well, HCl 7.5%: HF 1.5% acid was injected, the injection rate was 0.9 bpm, the acid volume was 93.2 bbl, and the pump injection pressure was 1153 psi.

The evaluation results of the FH-18 well before matrix acidizing had an oil flow rate (Q_o) of 14 bopd, Productivity Index (PI) of 0.639 bfpd/psi, skin of (+15), and flow efficiency (FE) of 0.315. The oil flow rate (Q_o) after matrix acidizing was 45.2 bopd, Productivity Index (PI) was 3.135 bfpd/psi, skin was (-2.493), and flow efficiency (FE) was 1.547. At well FH-36, before matrix acidizing, the oil flow rate (Q_o) was 0.3 bopd, Productivity Index (PI) was 0.533 bfpd/psi, skin was 3.582, and flow efficiency (FE) was 0.315. And after matrix acidising, the well did not produce oil and WC 100%. So that the value of Productivity Index (PI), skin, and flow efficiency (FE) did not increase. Based on these production parameters, it shows that the implementation of matrix acidizing stimulation in the FH-18 well was successful while the FH-36 well failed.

Keywords : Matrix acidizing, Stimulation, Carbonat, Sandstone