

## RINGKASAN

### **EVALUASI PELAKSANAAN STIMULASI *HYDRAULIC FRACTURING* PADA BATUAN *SANDSTONE* DI SUMUR DF-25 LAPANGAN “AFT”**

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Sumur DF-25 merupakan sumur yang terletak pada Lapangan “AFT”. Lapisan produktif pada sumur tersebut terletak pada Formasi Talang Akar yang berlitologi *sandstone* dengan kedalaman 2493 – 2498 m MD. Tidak adanya aliran fluida ke permukaan akibat permeabilitas yang tergolong rendah dengan nilai yang hanya sebesar 10 mD melatarbelakangi pelaksanaan *hydraulic fracturing* pada sumur ini. Suatu evaluasi pasca pelaksanaan *hydraulic fracturing* diperlukan untuk meninjau tingkat keberhasilan pelaksanaan *hydraulic fracturing* pada sumur DF-25.

Tahapan evaluasi yang dilakukan pada sumur DF-25 diawali dengan pengumpulan data, yang meliputi data reservoir, produksi, kompleksi sumur, mekanika batuan, serta *post job report*. Sementara evaluasi pelaksanaan *hydraulic fracturing* dilakukan dengan tahapan yang diawali dari perencanaan, kemudian dilanjutkan mengevaluasi operasi serta hasil stimulasi *hydraulic fracturing*. Perencanaan *hydraulic fracturing*, meliputi perhitungan geometri rekahan, penentuan fluida perekah, dan pemilihan *proppant*. Evaluasi operasi *hydraulic fracturing*, meliputi *step rate test*, *minifrac*, dan *main frac*. Evaluasi hasil stimulasi *hydraulic fracturing* dilakukan dengan mengevaluasi geometri rekahan serta performa produksi sumur.

Berdasarkan perhitungan manual, diperoleh model geometri rekahan metode PKN 2D, dengan panjang rekahan 292,27 ft; tinggi rekahan 11,48 ft; lebar rekahan 0,953 inch; dan konduktivitas rekahan 31582,4 mD ft. Fluida perekah yang digunakan, berupa fluida berjenis HT-4541 serta *proppant* berjenis CarboLITE 20/40. Operasi *hydraulic fracturing* pada sumur DF-25 dilakukan dengan memompakan volume *slurry* sebanyak 13106 gal. Hasil stimulasi *hydraulic fracturing* pada sumur DF-25 dinyatakan berhasil ditinjau peningkatan permeabilitas rata-rata dari 10 mD menjadi 104 mD serta *productivity index* yang meningkat 5,25 kali. Namun, laju produksi optimum pasca pelaksanaan *hydraulic fracturing* pada sumur DF-25 sebesar 3,5 bopd masih dibawah *economic limit* (*q limit*) sehingga tidak ekonomis.

Kata kunci: *Hydraulic Fracturing, Sandstone, Proppant, Productivity Index*

## ABSTRACT

### ***EVALUATION OF THE IMPLEMENTATION OF HYDRAULIC FRACTURING STIMULATION ON SANDSTONE ROCK IN THE DF-25 WELL "AFT" FIELD***

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*DF-25 well is a well located in the "AFT" Field. The productive layer in the well is located in the Talang Akar Formation with sandstone lithology which a depth of 2493 – 2498 m MD. The absence of fluid flow to the surface due to low permeability with a value of only 10 mD is the background for the implementation of hydraulic fracturing in this well. A post-implementation evaluation of hydraulic fracturing is needed to review the success of hydraulic fracturing implementation in the DF-25 well.*

*The hydraulic fracturing evaluation stage for the DF-25 well began with data collection, which included reservoir data, production, well completion, rock mechanics, and post job reports. Meanwhile, the evaluation of the implementation of hydraulic fracturing was carried out with stages that began with planning, then continued to evaluate the operation and results of hydraulic fracturing stimulation. Hydraulic fracturing planning includes calculating fracture geometry, determining fracturing fluid, and selecting proppant. Evaluation of hydraulic fracturing operations includes step rate test, minifrac, and main frac. Evaluation of hydraulic fracturing stimulation results is carried out by evaluating fracture geometry and well production performance.*

*Based on manual calculations, a fracture geometry model of the PKN 2D method was obtained, with a fracture length of 292,27 ft; fracture height of 11,48 ft; fracture width of 0,953 inches; and fracture conductivity of 31582,4 mD ft. The fracturing fluid used was HT-4541 fluid and CarboLITE 20/40 proppant. The hydraulic fracturing operation on the DF-25 well was carried out by pumping a slurry volume of 13106 gal. The results of hydraulic fracturing stimulation on the DF-25 well were declared successful in terms of increasing the average permeability from 10 mD to 104 mD and the productivity index increasing by 5,25 times. However, the optimum production rate after hydraulic fracturing on the DF-25 well of 3.5 bopd is still below the economic limit, so it's not economical.*

*Keywords: Hydraulic Fracturing, Sandstone, Proppant, Productivity Index*