ABSTRAK

EVALUASI *PRIMARY CEMENTING* DENGAN LOG CBL - VDL SERTA PERENCANAAN *SQUEEZE CEMENTING* PADA ZONA PRODUKTIF *CASING* LINER 7”

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Sumur “AJP-17” telah dilakukan *primary cementing* pada *casing* liner 7”. Setelah pekerjaan penyemenan selesai, dilakukan evaluasi. Penelitian ini bertujuan untuk mengetahui kualitas ikatan semen menggunakan log *Cement Bond Log* (CBL) dan *Variable Density Log* (VDL). Hasil evaluasi menunjukkan bahwa kualitas ikatan semen pada interval 9580–9630 ft masih kurang baik dan terindikasi terjadi *channeling* di belakang *casing*. Kondisi ini dapat menyebabkan aliran fluida antar formasi sehingga isolasi zona menjadi tidak optimal. Oleh karena itu, diperlukan operasi *squeeze cementing* untuk memperbaiki kualitas ikatan semen.

Metode penelitian dilakukan secara kualitatuf dan kuantitif berdasarkan nilai *amplitudo* CBL, *compressive strength, bond index,* serta respon gelombang akustik untuk menentukan indikasi *poor bond* dan *free pipe.* Berdasarkan hasil evaluasi tersebut, dilakukan perencanaan *squeeze cementing* melalui perhitungan volume *slurry,* tekanan injeksi, dan parameter operasi lainnya agar proses perbaikan semen dapat dilakukan dengan aman dan optimal. Keberhasilan *squeeze cementing* kemudian dievaluasi menggunakan *pressure test* untuk memastikan isolasi zona pada interval terget telah aman.

Evaluasi log CBL-VDL pada interval 9580-9630 ft menunjukkan kualitas ikatan semen masih tergolong buruk dengan nilai *compressive strength* berkisar 0-85 psi dengan rata-rata 16 psi, sedangkan *bond index* berada pada rentang 0,12-0,30 dengan rata-rata 0,15 terindikasi terjadi *channeling* sehingga perlu dilakukan *squeeze cementing*. Berdasarkan perhitungan *squeeze cementing* kebutuhan *slurry* didapatkan sebesar 12,75 bbl atau 42 sack, tekanan hidrostatis sebesar 4246 psi, tekanan maksimum pompa 260 psi dengan rate 2 bpm, serta estimasi waktu operasi selama 196 menit yang masih berada dibawah tekanan rekah formasi sebesar 4593 psi sehingga operasi aman dilakukan.

Katakunci: *Cement Bond Log, Channeling, Primary Cementing, Squeeze Cementing, Variable Density Log*

ABSTRACT

EVALUATION OF *PRIMARY CEMENTING* USING A CBL-VDL LOG AND PLANNING OF *SQUEEZE CEMENTING* IN THE PRODUCTIVE ZONE OF THE 7-INCH *CASING* LINER

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Primary cementing was performed on the 7" casing liner of the "AJP-17" well. After the cementing work was completed, an evaluation was conducted. This study aims to determine the quality of the cement bond using the Cement Bond Log (CBL) and the Variable Density Log (VDL). The evaluation results indicate that the cement bond quality in the 9580–9630 ft interval is still suboptimal, with indications of channeling behind the casing. This condition can cause fluid flow between formations, resulting in suboptimal zone isolation. Therefore, a squeeze cementing operation is required to improve the cement bond quality.

The research methodology was both qualitative and quantitative, based on CBL amplitude values, compressive strength, bond index, and acoustic wave response to identify indications of poor bond and free pipe. Based on the evaluation results, a squeeze cementing plan was developed by calculating the slurry volume, injection pressure, and other operational parameters to ensure the cement remediation process could be carried out safely and optimally. The success of the squeeze cementing was then evaluated using a pressure test to confirm that zone isolation within the target interval was secure.

An evaluation of the CBL-VDL log at the 9580–9630 ft interval indicates that the cement bond quality is still poor, with compressive strength values ranging from 0 to 85 psi and an average of 16 psi, while the bond index ranges from 0.12 to 0.30 with an average of 0.15. This suggests channeling has occurred, necessitating squeeze cementing. Based on the squeeze cementing calculations, the slurry requirement was determined to be 12.75 bbl or 42 sacks, with a hydrostatic pressure of 4246 psi, a maximum pump pressure of 260 psi at a rate of 2 bpm, and an estimated operation time of 196 minutes which remains below the formation fracture pressure of 4593 psi, making the operation safe to perform.

Keywords: Cement Bond Log, Channeling, Primary Cementing, Squeeze Cementing, Variable Density Log