RINGKASAN

EVALUASI KEGAGALAN PENYEMENAN PRIMER *TRAJECTORY CASING* 9 5/8" PADA *EXISTING WELL* (SUMUR "AJR-01") LAPANGAN "SJ" BERDASARKAN ANALISA DATA CBL-VDL

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Hasil penyemenan primer pada *casing* 9 5/8 *inch* sumur "AJR-01" mengalami kegagalan pada interval 2993 ft – 6993 ft yang disebabkan oleh pola aliran *turbulent* yang melewati zona *loss* pada kedalaman 4095 ft – 5015 ft. Sehingga perlu dilakukan *re-design* pada sumur "AJR-02" yang didasarkan pada sejarah penyemenan sumur "AJR-01". Penelitian ini dilakukan untuk mengevaluasi hasil penyemenan sumur "AJR-01" dengan menggunakan hasil pembacaan kurva dari kombinasi peralatan *logging* CBL – VDL dan merencanakan desain semen pada sumur "AJR-02".

Dari hasil evaluasi penyemenan yang didasarkan pada analisa kuantitatif diperoleh *Compressive Strength* baik (CS>500) sebesar 49,44%, *Compressive Strength* sedang (300<CS<500) sebesar 0,8%, dan *Compressive Strength* buruk (CS<300) sebesar 49,76%. Untuk *Bond Index* baik (BI>0,8) sebesar 8,25% dan *Bond Index* buruk (BI<0,8) sebesar 91,75%. Berdasarkan analisa kualitatif, dapat disimpulkan kualitas penyemenan menunjukkan 49,76% berindikasi *bad bond* yang terbagi menjadi *channeling*/*microannulus*, *bad to formation*, *free pipe* dan 49,44% menunjukkan *good bond*. Maka dilakukan *re-design* sumur "AJR-02" menggunakan metode *dual stage cementing*.

Dari hasil perencanaan penyemenan didapati *stage* I pada interval kedalaman 5018 ft MD – 6993 ft MD volume *slurry* yang dibutuhkan sebesar 143,5 bbl dan *stage* II pada interval kedalaman 3045 ft MD – 5018 ft MD volume *slurry* yang dibutuhkan sebesar 136 bbl. Untuk menempatkan *slurry* ke dalam lubang *annulus* digunakan pola aliran *turbulent* pada *stage* I dan *laminar* pada *stage* II. *Thickening time* pada *stage* I dan II sebesar 3 jam 36 menit dan 3 jam 12 menit, sehingga dapat diperkirakan penyemenan yang dihasilkan baik.

Kata kunci: penyemenan, evaluasi, perencanaan, *dual stage cementing*.

ABSTRACT

EVALUATION OF FAILURE THE PRIMARY CEMENTING OF TRAJECTORY CASING 9 5/8" ON THE EXISTING WELL (WELL "AJR-01") OF THE SJ FIELD BASED ON CBL-VDL DATA ANALYSIS

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The results of the primary cementing of the 9 5/8 inch casing of the "AJR-01" well failed at intervals of 2993 ft - 6993 ft caused by a turbulent flow pattern that passed through the loss zone at a depth of 4095 ft - 5015 ft. So it is necessary to re-design the "AJR-02" well which is based on the history of cementing the "AJR-01" well. This research was conducted to evaluate the results of cementing the "AJR-01" well by using the results of reading the curve from the combination of CBL - VDL logging equipment and planning the cement design of the "AJR-02" well.

From the results of cement evaluation based on quantitative analysis, good Compressive Strength (CS> 500) was obtained at 49.44%, moderate Compressive Strength (300<CS<500) at 0.8%, and bad Compressive Strength (CS<300) at 49.76%. The good Bond Index (BI>0.8) is 8.25% and the bad Bond Index (BI<0.8) is 91.75%. Based on the qualitative analysis, it can be concluded that cement quality shows 49.76% indicating bad bond which is divided into channeling/microannulus, bad to formation, free pipe and 49.44% indicating good bond. Then a re-design of the "AJR-02" well was carried out using the dual stage cementing method.

The results of cement planning, it was found that stage I at a depth interval of 5018 ft MD – 6993 ft MD required slurry volume of 143.5 bbl and stage II at a depth interval of 3045 ft MD – 5018 ft MD required slurry volume of 136 bbl. To place the slurry into the annulus hole, a turbulent flow pattern is used in stage I and laminar in stage II. Thickening time in stage I and II is 3 hours 36 minutes and 3 hours 12 minutes, so it can be estimated that the cement produced is good.

Keywords: cementing, evaluation, planning, dual stage cementing.