RINGKASAN

ANALISIS PEKERJAAN *PRIMARY CEMENTING* DAN *REMEDIAL CEMENTING* BERDASARKAN DATA CBL DAN VDL PADA SUMUR "GT-2" DI LAPANGAN "DYS"

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Pada operasi pemboran Sumur "GT-2" Lapangan DYS, terjadi *loss circulation* sebesar 84.85 m^3 (*Spacer* 23 m^3 & Semen (*Lead* & *Tail*) 53.25 m^3 berdasarkan simulasi) pada *section production casing* 9-5/8" dengan kedalaman 2714 mMD/2536 mTVD. Hasil analisis *log* CBL-VDL menunjukkan indikasi *free pipe* dari kedalaman 1195 – 1570 mMD, dengan rata-rata *amplitude* CBL sebesar 44 mV dan VDL yang menunjukkan *casing arrival* lurus tajam tanpa sinyal *formation arrival*. Untuk mengatasi permasalahan tersebut, dilakukan *remedial cementing* yang telah didesain dan dilaksanakan pada sumur "GT-2" yang bertujuan menutup zona target, khususnya pada interval penempatan *gravel pack*. Evaluasi setelah dilakukan *remedial cementing* untuk mengetahui keberhasilan dan kualitas ikatan semen.

Metodologi mencakup pengumpulan data sumur, data pompa, dan data semen, serta evaluasi desain *remedial cementing* dengan menghitung ulang volume *slurry,* aditif, *spacer*, dan *displacement*. Penilaian dilakukan secara kualitatif dan kuantitatif menggunakan CBL *Interpretation Chart* untuk menentukan kekuatan semen. Jika analisa ikatan semen masih buruk, maka perlu dilakukan *remedial cementing* ulang. Namun, jika semen menunjukkan ikatan yang baik, maka pekerjaan *remedial cementing* dinyatakan berhasil.

Berdasarkan hasil analisa, volume *slurry* yang diperlukan sebesar 236.62 bbl dengan tekanan pompa sekitar 300 psi dan laju alir 3 bpm. Operasi *remedial cementing* menunjukkan keberhasilan yang ditandai dengan *Top of Cement* (TOC) pada kedalaman 206 mMD, hasil uji tekanan menunjukkan *compressive strength* sebesar 1623 psi pada 24 jam dan 2009 psi pada 48 jam, serta tidak terdeteksi kebocoran selama *pressure test* 300/3000 psi selama 15 menit. Dan hasil analisis *log* CBL-VDL, dengan analisa kualitatif dan kuantitatif menunjukkan perbaikan ikatan semen, dengan penurunan *amplitude* CBL dari 44 mV menjadi 19.7 mV, peningkatan *compressive strength* dari 69.2 psi menjadi 711.3 psi, dan kenaikan *bond index* dari 0.12 menjadi 0.34.

Kata kunci: *Bond Index*, CBL, *Compressive Strength*, *Remedial cementing*, VDL.

ABSTRACT

ANALYSIS OF PRIMARY CEMENTING AND REMEDIAL CEMENTING BASED ON CBL AND VDL DATA AT WELL "GT-2" IN THE "DYS" FIELD.

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In the drilling operation of Well "GT-2" DYS Field, there was a loss circulation of 84.85 m3 (Spacer 23 m3 & Cement (Lead & Tail) 53.25 m3 based on simulation) in the 9-5/8" production casing section with a depth of 2714 mMD/2536 mTVD. CBL-VDL log analysis results showed indications of free pipe from a depth of 1195 - 1570 mMD, with an average CBL amplitude of 44 mV and VDL indicating a sharp straight casing arrival with no formation arrival signal. To overcome these problems, remedial cementing has been designed and implemented in the "GT-2" well which aims to close the target zone, especially in the gravel pack placement interval. Evaluation after remedial cementing was carried out to determine the success and quality of the cement bond.

The methodology included collecting well data, pump data and cement data, and evaluating the remedial cementing design by recalculating slurry volume, additives, spacers and displacement. Qualitative and quantitative assessments were made using the CBL Interpretation Chart to determine cement strength. If the cement bond analysis was poor, remedial cementing was required. However, if the cement showed a good bond, then the remedial cementing work was declared successful.

Based on the analysis, the required slurry volume was 236.62 bbl with a pump pressure of approximately 300 psi and a flow rate of 3 bpm. The remedial cementing operation showed success characterized by Top of Cement (TOC) at a depth of 206 mMD, pressure test results showed compressive strength of 1623 psi at 24 hours and 2009 psi at 48 hours, and no leakage was detected during a pressure test of 300/3000 psi for 15 minutes. And the results of CBL-VDL log analysis, with qualitative and quantitative analysis showed improvement in cement bond, with a decrease in CBL amplitude from 44 mV to 19.7 mV, an increase in compressive strength from 69.2 psi to 711.3 psi, and an increase in bond index from 0.12 to 0.34.

Keywords: Bond Index, CBL, Compressive Strength, Remedial Cementing, VDL.