ABSTRAK

EVALUASI *PRIMARY CEMENTING CASING LINER* 7 INCH DENGAN ANALISA LOG CBL-VDL DAN USIT PADA SUMUR "FS-07"

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Kualitas *primary cementing* pada *casing liner* 7 inci sangat berpengaruh terhadap keberhasilan zona isolasi, integritas sumur, dan kelancaran produksi hidrokarbon. Penyemenan yang buruk dapat menyebabkan problem seperti *free pipe, microannulus,* dan *channeling* yang menjadi jalur migrasi fluida di belakang *casing.* Evaluasi kualitas penyemenan umumnya menggunakan *Cement Bond Log* (CBL) dan *Variable Density Log* (VDL), namun metode tersebut memiliki keterbatasan dalam mendeteksi distribusi semen secara detail. Oleh karena itu, digunakan *Ultrasonic Imager Tool* (USIT) yang mampu memberikan citra ultrasonik 360° untuk meningkatkan akurasi evaluasi penyemenan pada sumur "FS-07". Analisa ini bertujuan mengevaluasi kualitas *primary cementing casing liner* 7 inci, mengidentifikasi problem penyemenan, serta menganalisis pengaruh volume *slurry* dan *thickening time* terhadap kualitas ikatan semen.

Metode yang digunakan yaitu analisa kuantitatif dan kualitatif menggunakan integrasi log CBL-VDL dan USIT pada interval kedalaman 7200-7985 ft. Analisa kuantitatif dilakukan berdasarkan nilai *Compressive Strength* (CS) dan *Bond Indeks* (BI), sedangkan analisa kualitatif dilakukan melalui interpretasi respon amplitudo CBL, pola gelombang VDL, dan citra ultrasonik USIT. Dari hasil analisa tersebut, selanjutnya dilakukan evaluasi terhadap desain bubur semen dan tahap pelaksanaan operasi penyemenan.

Hasil evaluasi menujukkan nilai CS baik sebesar 10,2%, CS sedang 1,36%, dan CS buruk 88,4%, sedangkan BI baik sebesar 10,2% dan BI buruk sebesar 89,8%. Berdasarkan hasil tersebut, maka dapat disimpulkan kualitas penyemenan buruk yang diindikasi *microannulus, channeling,* dan *free pipe.* Sehingga di sarankan untuk melakukan *remidial cementing* pada operasi selanjutnya.

Kata kunci: *Cement Bond Log* (CBL)*, Primary cementing, Ultrasonic Imager Tool* (USIT)*, Variable Density Log* (VDL)

ABSTRACT

EVALUATION OF A 7 INCH PRIMARY CEMENTED CASING LINER USING CBL-VDL AND USIT LOG ANALYSIS IN WELL "FS-07"

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The quality of primary cementing in a 7 inch casing liner significantly affects the success of the isolation zone, well integrity, and the smooth flow of hydrocarbon production. Poor cementing can lead to problems such as free pipe, microannulus, and channeling, which serve as pathways for fluid migration behind the casing. Cementing quality is typically evaluated using Cement Bond Logs (CBL) and Variable Density Logs (VDL); however, these methods have limitations in detecting detailed cement distribution. Therefore, an Ultrasonic Imager Tool (USIT) was employed to provide 360° ultrasonic imaging, thereby enhancing the accuracy of cementing evaluation in the "FS-07" well. This analysis aims to evaluate the quality of the primary cementing of the 7-inch casing liner, identify cementing issues, and analyze the effects of slurry volume and thickening time on cement bond quality.

Translated with DeepL.com (free version)This analysis aims to evaluate the quality of the primary cementing of the 7 inch casing liner, identify cementing issues, and analyze the effects of slurry volume and thickening time on cement bond quality. The methods employed include quantitative and qualitative analyses using the integration of CBL-VDL logs and USIT data at the depth interval of 7200-7985 ft. Quantitative analysis was based on Compressive Strength (CS) and Bond Index (BI) values, while qualitative analysis was conducted through interpretation of CBL amplitude response, VDL wave patterns, and USIT ultrasonic images.

The evaluation results show that 10.2% of the CS ratings were good, 1.36% were moderate, and 88.4% were poor, while 10.2% of the BI ratings were good and 89.8% were poor. Based on these results, it can be concluded that the cementing quality is poor, as indicated by microannulus, channeling, and free pipe. Therefore, it is recommended to perform remedial cementing in subsequent operations.

Keywords: Cement Bond Log (CBL)*, Primary cementing, Ultrasonic Imager Tool* (USIT)*, Variable Density Log* (VDL)