

RINGKASAN

ANALISIS *PRIMARY CEMENTING* MENGGUNAKAN *CEMENTING CHECKLIST* YANG DIVALIDASI *LOG CBL- VDL* PADA SUMUR X & Y LAPANGAN “CY”

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Analisis keberhasilan *primary cementing* sangat penting dalam menjamin integritas sumur dan kelancaran produksi hidrokarbon ke depan. Umumnya, evaluasi dilakukan menggunakan *Log Cement Bond Log* (CBL) dan *Variable Density Log* (VDL), namun akibat efisiensi anggaran serta *job sequences* yang akan bertambah dan *direct/indirect cost* semakin mahal terutama pada kondisi *reservoir* yang semakin marginal pada sumur-sumur yang ada di Lapangan “CY” perlu menjadi bahan pertimbangan untuk tidak dilakukan dimasa yang akan datang. Dengan latar belakang tersebut, diperlukan metode evaluasi yang lebih hemat biaya namun tetap menjamin kualitas penyemenan suatu sumur.

Metodologi penelitian ini menggunakan *cementing checklist* meliputi tahapan dari sirkulasi dan pengondisian lumpur, sentralisasi *casing*, performa peralatan mekanikal alat, karakteristik *slurry*, kestabilan lubang bor, laju *displace*, hingga analisis tekanan dan hasil akhir penyemenan. Validasi dilakukan menggunakan *log CBL-VDL* untuk memastikan kesesuaian hasil *cementing checklist* dengan data *log*. Hasil validasi ini digunakan sebagai dasar penarikan kesimpulan terkait kelayakan penggunaan *cementing checklist* dalam evaluasi penyemenan tanpa *log CBL-VDL*.

Berdasarkan hasil analisis *cementing checklist*, Sumur X memenuhi seluruh parameter sesuai standar dan program, dibuktikan dengan hasil *log CBL-VDL* yang menunjukkan *good bonding* di seluruh interval analisis. Sebaliknya, Sumur Y menunjukkan beberapa parameter tidak terpenuhi, dengan *losses* sebesar 40 m³ sepanjang 982 mMD dan volume *displace* hanya 8,17 m³, mengindikasikan kehilangan sirkulasi signifikan. Hasil *log CBL-VDL* menunjukkan adanya *channeling* dan *free pipe* pada kedalaman 15–25 mMD, 1254 mMD, 1264–1267 mMD, 1269 mMD, 1287 mMD, 1296–1297 mMD, dan 1306–1307 mMD, sehingga diperlukan *secondary cementing* untuk memperbaiki kualitas ikatan semen di sekitar zona titik target perforasi. Membuktikan *cementing checklist* layak dan efektif digunakan ke depan karena sejalan dengan data *log CBL-VDL*.

Kata kunci: CBL, *cementing checklist*, *fulfilled*, *good bonding*, VDL

ABSTRACT

ANALYSIS OF PRIMARY CEMENTING USING A CEMENTING CHECKLIST VALIDATED BY CBL-VDL LOGGING IN WELLS X & Y OF THE “CY” FIELD

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Analysis of primary cementing success is very important in ensuring well integrity and smooth hydrocarbon production in the future. Generally, evaluation is carried out using Cement Bond Log (CBL) and Variable Density Log (VDL), but due to budget efficiency and increasing job sequences and direct/indirect costs, especially in marginal reservoir conditions in wells in the “CY” Field, it is necessary to consider not doing this in the future. Against this backdrop, a more cost-effective evaluation method is needed that still ensures the quality of a well's cementing.

This research methodology uses a cementing checklist covering stages from mud circulation and conditioning, casing centralization, mechanical equipment performance, slurry characteristics, borehole stability, displacement rate, to pressure analysis and final cementing results. Validation is performed using CBL-VDL logs to ensure the cementing checklist results match the log data. The results of this validation are used as the basis for drawing conclusions regarding the feasibility of using the cementing checklist in evaluating cementing without CBL-VDL logs.

Based on the cementing checklist analysis results, Well X meets all parameters according to standards and programs, evidenced by the CBL-VDL log results which show good bonding throughout the analysis interval. In contrast, Well Y shows several parameters are not met, with losses of 40 m³ throughout 982 mmD and a displacement volume of only 8.17 m³, indicating significant circulation loss. The CBL-VDL log results show channeling and free pipes at depths of 15–25 mmD, 1254 mmD, 1264–1267 mmD, 1269 mmD, 1287 mmD, 1296–1297 mmD, and 1306–1307 mmD, so secondary cementing is needed to improve the quality of cement bonding around the target perforation point zone. Proving that the cementing checklist is feasible and effective for future use because it is in line with the CBL-VDL log data.

Keywords: CBL, cementing checklist, fulfilled, good bonding, VDL