ABSTRAK

PERANCANGAN PENGEBORAN BERARAH PADA SUMUR "Q-58" LAPANGAN "W"

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Pemboran sumur "Q-58" di Lapangan "W" direncanakan untuk memproduksi cadangan minyak yang belum terambil pada formasi Telisa, dan Duri. Pemboran berarah diterapkan karena target reservoir tidak dapat dijangkau melalui pemboran vertikal konvensional, sehingga perencanaan teknis yang komprehensif diperlukan agar sumur dapat mencapai target secara akurat dan aman.

Penelitian ini menggunakan pendekatan analitik untuk seluruh aspek teknis, mencakup perencanaan lintasan dengan metode *Minimum Curvature*, desain *casing*, program lumpur, penyemenan, perencanaan BHA, dan evaluasi rig. Hasil perhitungan divalidasi menggunakan perangkat lunak industri WellPlan untuk analisis hidrolika serta torque and drag.

Sumur "Q-58" ditetapkan berprofil J-*Type* dengan kedalaman akhir 1143 ft MD (988 ft TVD), inklinasi maksimum 39°, azimut N32.84°E, dan KOP pada 200 ft MD. Nilai DDI sebesar 4.411 mengklasifikasikan sumur ini dalam kategori kesulitan sedang. Desain casing menggunakan conductor 20", surface casing 9 5/8" K-55, dan liner 5 1/2" K-55. Lumpur KCl Polymer 7% digunakan dengan densitas 8.9 - 9.2 ppg (surface) dan densitas 9.2 - 9.4 ppg (liner), dan penyemenan surface section menggunakan single slurry 13.0 ppg sebesar 38.51 bbl. Penyemenan liner section menggunakan single slurry 13.5 ppg sebesar 43.73 bbl. Seluruh parameter keamanan casing, hidrolika, serta torque and drag terkonfirmasi memenuhi persyaratan minimum. Rig PDSI #550 HP dinyatakan layak untuk mengeksekusi seluruh operasi pemboran Sumur "Q-58".

Keywords: Desain *Casing*, Desain Lintasan, Pemboran Berarah, Pemilihan Rig, Sumur J-*Type*

ABSTRACT

DIRECTIONAL DRILLING DESIGN OF "Q-58" WELL IN "W" FIELD

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Drilling of the "Q-58" well in the "W" Field is planned to produce remaining oil reserves within the Telisa, and Duri formations. Directional drilling is applied since the reservoir target cannot be reached through conventional vertical drilling, making comprehensive technical planning essential to ensure accurate and safe well execution.

This study employs analytical calculations covering trajectory planning using the Minimum Curvature method, casing design, drilling fluid program, cementing design, BHA planning, and rig evaluation. All results were validated using WellPlan software for hydraulics and torque and drag analysis.

Well "Q-58" is established with a J-Type profile reaching 1,143 ft MD (988 ft TVD), a maximum inclination of 39°, an azimuth of N32.84°E, and a KOP at 200 ft MD. A DDI value of 4.411 classifies the well in the medium difficulty category. The casing design comprises a 20-inch conductor, 9-5/8 inch K-55 surface casing, and a 5-1/2 inch K-55 liner. A 7% KCl-Polymer mud system with densities of 8.9-9.2 (surface and densities of 9.2-9.4 ppg (liner) ppg was applied, and the surface section cementing uses a single slurry of 13.0 ppg totalling 38.51 bbl. The liner section cementing uses a single slurry of 13.5 ppg totalling 43.73 bbl. All casing integrity, hydraulics, and torque and drag parameters confirm compliance with minimum design requirements. The PDSI #550 HP Rig is deemed fit for purpose to execute all drilling operations for Well "Q-58".

Keywords: Casing Design, Directional Drilling, J-Type Well, Rig Selection, Trajectory Design