ABSTRAK

PERHITUNGAN ULANG *PRIMARY CEMENTING* PADA SUMUR "Y-06" LAPANGAN "YW"

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Primary cementing merupakan salah satu tahapan penting dalam kegiatan pemboran sumur minyak dan gas bumi yang bertujuan untuk memberikan isolasi antar zona formasi, menopang casing, serta menjaga integritas sumur. Keberhasilan proses penyemenan sangat dipengaruhi oleh ketepatan desain penyemenan yang meliputi volume slurry, kebutuhan semen, serta parameter pemompaan. Sumur "Y-06" Lapangan "YW" merupakan sumur *directional* yang dibor hingga kedalaman akhir 6.793 ft MD / 6.497 ft TVD dengan beberapa trayek casing yaitu 30", 20", 13-3/8", 9-5/8", dan 7" liner. Oleh karena itu, diperlukan perhitungan ulang primary cementing untuk memastikan desain penyemenan sesuai dengan kondisi geometri sumur dan trayek casing yang digunakan.

Perhitungan ulang *Primary Cementing* ini dilakukan berdasarkan tahapan pada flowchart penelitian. Tahapan penelitian diawali dengan pengumpulan data sumur yang meliputi lintasan sumur (MD dan TVD), kedalaman trayek penyemenan, ukuran casing dan lubang sumur, serta data litologi formasi. Selanjutnya dilakukan perhitungan ulang desain slurry yang mencakup volume slurry, densitas slurry, yield slurry, kebutuhan semen, dan kebutuhan air pencampur. Tahap berikutnya adalah perhitungan displacement yang meliputi volume displacement, laju aliran pemompaan, serta penyusunan pumping schedule untuk memastikan slurry semen dapat terdorong hingga mencapai top of cement yang direncanakan.

Hasil perhitungan ulang menunjukkan bahwa kebutuhan semen sebesar 1.194 sacks untuk casing 20", 2.830 sacks untuk casing 13-3/8", 664 sacks untuk casing 9-5/8", dan 67 sacks untuk liner 7". Cementing pada casing 9-5/8" menggunakan 187 bbl lead slurry dengan densitas 13,5 ppg dan 51 bbl tail slurry dengan densitas 15,8 ppg, sedangkan cementing pada liner 7" menggunakan 33 bbl slurry dengan densitas 12,5 ppg dengan tekanan bumping mencapai 1.000 psi. Hasil perhitungan menunjukkan bahwa desain primary cementing pada Sumur "Y-06" Lapangan "YW" dapat memenuhi kebutuhan isolasi zona serta mendukung integritas sumur secara teknis.

Kata kunci : *Displacement*, *Primary Cementing*, *Slurry Design*, *Directional*, *Top of Cement*.

ABSTRACT

RECALCULATION PRIMARY CEMENTING IN WELL "Y-06" FIELD "YW"

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Primary cementing is one of the important stages in oil and gas well drilling operations which aims to provide zonal isolation between formations, support the casing, and maintain well integrity. The success of the cementing process is strongly influenced by the accuracy of the cementing design, which includes slurry volume, cement requirements, and pumping parameters. Well "Y-06" in the "YW" Field is a directional well drilled to a final depth of 6,793 ft MD / 6,497 ft TVD with several casing strings consisting of 30", 20", 13-3/8", 9-5/8", and a 7" liner. Therefore, a recalculation of the primary cementing is required to ensure that the cementing design is appropriate for the well geometry and the casing intervals used.

The recalculation of primary cementing was carried out based on the stages outlined in the research flowchart. The research stages began with the collection of well data including well trajectory (MD and TVD), cementing interval depth, casing size and hole size, as well as formation lithology data. Furthermore, the recalculation of slurry design was conducted, including slurry volume, slurry density, slurry yield, cement requirements, and mixing water requirements. The next stage was the displacement calculation which included displacement volume, pumping rate, and the preparation of a pumping schedule to ensure that the cement slurry could be displaced until it reached the planned top of cement.

The recalculation results show that the cement requirement is 1,194 sacks for the 20" casing, 2,830 sacks for the 13-3/8" casing, 664 sacks for the 9-5/8" casing, and 67 sacks for the 7" liner. Cementing for the 9-5/8" casing uses 187 bbl of lead slurry with a density of 13.5 ppg and 51 bbl of tail slurry with a density of 15.8 ppg, while cementing for the 7" liner uses 33 bbl of slurry with a density of 12.5 ppg with a bumping pressure reaching 1,000 psi. The results indicate that the primary cementing design for Well "Y-06" in the "YW" Field can fulfill zonal isolation requirements and technically support well integrity.

Keywords : Displacement, *Primary Cementing*, *Slurry Design*, *Directional*, *Top of Cement*.