ABSTRAK

EVALUASI *PROBLEM* DAN PENANGGULANGAN *KICK* MENGGUNAKAN METODE *CONCURRENT* PADA SUMUR "YF05" LAPANGAN "YPA"

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Sumur "YF05" pada Lapangan "YPA" merupakan sumur pemboran eksplorasi, pemboran berlangsung hingga target pemboran yang telah ditentukan dan tidak terdapat adanya masalah, namun setelah pompa dinonaktifkan dan hendak mencabut rangkaian terjadi *problem well kick* pada kedalaman 4710 ft TVD/ 5161 ft MD. Hal ini dapat dilihat dengan adanya aliran di dalam lubang sumur saat pompa dinonaktifkan. *Well kick* terjadi pada trayek *production* 8 ½" *open hole* dan lumpur yang digunakan menggunakan tipe *KCl* Polymer dengan densitas lumpur sebesar 10,5 ppg sehingga tekanan formasi sebesar 2816 psi sedangkan tekanan hidrostatik sebesar 2561 psi.

Langkah-langkah untuk melakukan analisa penanggulangan *well kick* adalah menentukan tekanan formasi, tekanan hidrostatik, tekanan hidrodinamik, dan tekanan rekah formasi. Kemudian menentukan metode penanggulangan *well kick*. Selanjutnya menentukan densitas lumpur baru dan volume lumpur penanggulangan *well kick*. Menentukan *stroke* pompa dan waktu pemompaan untuk penanggulangan *well kick*. Menentukan *initial circulating pressure*, *final circulating pressure* dan *pressure drop*. Kemudian terakhir menentukan tekanan hidrostatik dan *shut in drillpipe pressure* setelah *killing well*.

Dari hasil perhitungan diketahui tekanan formasi sebesar 2816 psi, tekanan hidrostatik sebesar 2561 psi, tekanan hidrodinamik sebesar 3743 psi dan tekanan rekah formasi sebesar 3261 psi. Metode yang digunakan untuk penanggulangan *well kick* yaitu metode *concurrent*. Densitas lumpur baru yang digunakan yaitu sebesar 11,5 ppg dan total volume *killing mud* sebesar 1129,97 bbl. Total *stroke* pompa untuk sirkulasi pertama dan kedua sebesar 5271 *stroke* dan total waktu penanggulangan *well kick* menggunakan metode c*oncurrent* selama 178,7 menit. Diperoleh nilai *initial circulating pressure* sebesar 1096 psi, *final circulating pressure* sebesar 174 psi dan *pressure drop* sebesar 22,2 psi/menit atau 49,56 psi/2,2 menit. Setelah dilakukan *killing well* diketahui tekanan hidrostatik sebesar 2561 psi dan SIDP sebesar 0 psi sehingga menandakan bahwa sudah tidak ditemukan aliran fluida *kick* dari formasi ke lubang sumur dan penanggulangan *well kick* pada sumur "YF05" lapangan "YPA" dinyatakan efektif.

Kata kunci: Metode *Concurrent*, *Shut In Drillpipe Pressure,* Tekanan Formasi, *Well Kick*.

ABSTRACT

EVALUATION OF WELL KICK PROBLEM MANAGEMENT USING THE CONCURRENT METHOD IN "YF05" WELL "YPA" FIELD

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The "YF05" well in the "YPA" Field is an exploratory drilling well, drilling continued until the predetermined drilling target and there were no problems, however after the pump was turned off and about to withdraw the series a well kick problem occurred at a depth of 4710 ft TVD / 5161 ft MD. This is indicated by the presence of flow in the wellbore when the pump is turned off. The well kick occurred on the 8 ½" open hole production route and the mud used was of the KCL Polymer type with a mud density of 10,5 ppg so that the formation pressure was 2816 psi while the hydrostatic pressure was 2561 psi.

The steps to carry out a well kick mitigation analysis are to determine formation pressure, hydrostatic pressure, hydrodynamic pressure and formation fracturing pressure. Then determine the method for dealing with well kicks. Next, determine the density of the new mud and the volume of the well kick mitigation mud. Determine the pump stroke and pumping time to overcome well kick. Determine initial circulating pressure, final circulating pressure and pressure drop. Then finally determine the hydrostatic pressure and shut in drillpipe pressure after killing the well.

From the calculation results, it is known that the formation pressure is 2816 psi, hydrostatic pressure is 2561 psi, hydrodynamic pressure is 3743 psi and formation fracture pressure is 3261 psi. The method used to overcome well kicks is the concurrent method. The density of the new mud used was 11.5 ppg and the total volume of killing mud was 1129.97 bbl. The total pump stroke for the first and second circulation was 5271 strokes and the total time to handle the well kick using the driller method was 178,7 minutes. The initial circulating pressure value was 670 psi, the final circulating pressure was 1096 psi and the pressure drop was 22.2 psi/minute or 49.56 psi/2.2 minutes. After killing well, it was discovered that the hydrostatic pressure was 2561 psi and the SIDP was 0 psi, indicating that there was no flow of kick fluid from the formation to the wellbore and the well kick response in the "YF05" well in the "YPA" field was declared successful.

Keywords: Concurrent Method, Shut In Drillpipe Pressure, Formation Pressure, Well Kick.