

ABSTRAK

EVALUASI PENANGGULANGAN *WELL KICK* DENGAN METODE *WAIT AND WEIGHT* PADA SUMUR “WW-001” LAPANGAN “PTR”

Oleh
Wisnu Widiyanto
NIM: 113210059
(Program Studi Sarjana Teknik Perminyakan)

Sumur “WW-001” merupakan sumur eksplorasi yang terdapat pada Lapangan “PTR” dengan kedalaman terakhir pada trayek 8,5 inch mencapai 7218 ft yang bertujuan untuk membuktikan perolehan hidrokarbon pada Formasi Talang Akar. Terjadi permasalahan *well kick* saat cabut rangkaian yang ditandai dengan tetap adanya aliran dari dalam lubang sumur Dimana tekanan formasi 4308 psi lebih besar dari tekanan hidrostatik 3908 psi. Sehingga dilakukan tindakan prosedur penanggulangan *well kick* dengan metode *wait and weight*.

Langkah-langkah evaluasi penanggulangan *well kick* menggunakan metode *wait and weight* diawali dengan pengumpulan data lapangan meliputi data rencana pemboran dan data pelaksanaan pemboran. Selanjutnya melakukan perhitungan tekanan hidrostatik lumpur saat *kick*, tekanan formasi saat *kick*, penentuan densitas lumpur baru (*kill mud weight*), jumlah *sack barite* yang ditambahkan, jumlah *strokes* pompa yang diperlukan untuk penanggulangan *well kick*, total waktu yang diperlukan untuk penanggulangan *well kick*, dan nilai *Shut-In Drillpipe Pressure* (SIDP) setelah proses penanggulangan *well kick*.

Dari hasil perhitungan, tekanan formasi pada kedalaman 7218 ft sebesar 4308 psi dapat ditanggulangi dengan densitas *kill mud weight* sebesar 11,48 ppg sehingga dibutuhkan penambahan *barite* sebesar 309 *sack*. Jumlah *strokes* pompa yg diperlukan sebanyak 6212 *strokes* dengan waktu sirkulasi selama 82,8 menit. Dari hasil perhitungan, didapatkan harga ICP sebesar 1263 psi dan FCP sebesar 951 psi. Dengan demikian, penanggulangan *well kick* dengan metode *wait and weight* pada Sumur “WW-001” berhasil dilakukan. Hal ini dibuktikan dengan setelah dilakukannya operasi *killing well*, terbaca harga SIDP dan SICP sebesar 0 psi yang menunjukkan bahwa sudah tidak ada aliran fluida *kick* dari formasi ke lubang sumur.

Kata kunci: tekanan, metode *wait and weight*, *well control*, *well kick*

ABSTRACT

EVALUATION OF WELL KICK MITIGATION USING WAIT AND WEIGHT METHOD IN “WW-001” WELL “PTR” FIELD

By

Wisnu Widiyanto

NIM: 113210059

(Petroleum Engineering Undergraduated Program)

Well “WW-001” is an exploration well located in the “PTR” Field, with a final depth of 7,218 ft in the 8.5-inch hole section. The objective of this well is to confirm hydrocarbon presence within the Talang Akar Formation. A well kick occurred due while pulling out the drill string, indicated by continuous flow. This incident was caused by the formation pressure of 4,308 psi exceeding the hydrostatic pressure of 3,908 psi. Therefore, a well kick mitigation procedure was carried out using the wait and weight method.

The evaluation steps for the well kick mitigation using the wait and weight method began with the collection of field data, including both the drilling plan and actual drilling operation data. Subsequent calculations involved determining the hydrostatic pressure at the time of the kick, the formation pressure, the required kill mud weight (KMW), the amount of barite to be added, the number of pump strokes needed to circulate the kill mud, the total time required for the kick control operation, and the Shut-In Drillpipe Pressure (SIDP) after the kill procedure.

Based on the calculations, the formation pressure at a depth of 7,218 ft is 4,308 psi, which can be controlled using a kill mud weight density of 11.48 ppg, requiring the addition of 309 sacks of barite. The number of pump strokes needed is 6,212 strokes with a circulation time of 82.8 minutes. From the calculations, the Initial Circulating Pressure (ICP) is 1,263 psi and the Final Circulating Pressure (FCP) is 951 psi. Thus, the well kick was successfully handled using the wait and weight method on Well “WW-001”. This is evidenced by the fact that after the well killing operation, both the Shut-In Drill Pipe Pressure (SIDP) and Shut-In Casing Pressure (SICP) read 0 psi, which indicates that there is no longer any kick fluid flow from the formation into the wellbore.

Keywords: pressure, wait and weight method, well control, well kick