

## RINGKASAN

Lapangan “VILA” memiliki 2 sumur *existing* yaitu sumur “VILA-1” dan “VILA-2” selanjutnya akan dilakukan pengeboran dengan 5 sumur usulan diantaranya Sumur “VILA-3”, “VILA-4”, “VILA-5”, “VILA-6”, “VILA-8”. Pada sumur *existing* Lapangan “VILA” *grade casing* yang digunakan kurang optimal, dimana tidak memperhatikan kandungan CO<sub>2</sub> dan H<sub>2</sub>S yang terdapat pada formasi produktif. Sehingga perlu dilakukan evaluasi untuk mendapatkan *casing design* yang optimal dan memenuhi syarat secara teknis, agar dapat dijadikan acuan dalam perencanaan *casing design* sumur selanjutnya.

Evaluasi *casing design* menggunakan metode maksimum *load* dengan memperhitungkan beban-beban yang bekerja pada *casing* seperti *burst load*, *collapse load*, *tension load* dan *biaxial*.

Hasil dari evaluasi *casing design* sumur usulan *conductor casing* dilakukan *drive to revusal* 15 m (0-49,2 ft) dimana pada sumur *existing* sampai kedalaman 11 m (0-36 ft), *surface casing* dibor sampai kedalaman 300 m (0-984 ft) yang menggunakan *casing* K-55; 106,5 ppf; BTC; R3 dimana pada sumur *existing* sampai kedalaman 305 m (0-1001 ft) menggunakan *casing* K-55; 94 ppf; BTC; R3, *intermediate casing* terdiri dari 2 *section*, *section 1* (0–2500 ftTVD) menggunakan *casing* L-80; 72 ppf, BTC; R3, *section 2* (2500-3936 ftTVD) menggunakan *casing* P-110; 80,7 ppf, BTC; R3 dimana pada sumur *existing* terdiri 1 *section* sampai kedalaman 1200 m (0-3937 ft) menggunakan *casing* N-80; 72 ppf; BTC; R3, *production casing* terdiri dari 2 *section*, *section 1* (0–5028,7 ftTVD) menggunakan *casing* L-80; 47 ppf, BTC; R3, *section 2* (5028,7-7543 ftTVD) menggunakan *casing* N-80; 58,4 ppf, BTC; R3 dimana pada sumur *existing* terdiri 1 *section* sampai kedalaman 2064 m (0-6772 ft) menggunakan *casing* N-80; 53,5 ppf; BTC; R3, dan *liner casing* 2289,41-2733 m (7511,2–8968 ft) menggunakan *casing* SM22CR-110; 41 ppf; PE dimana pada sumur *existing* menggunakan *grade casing* standar API N-80; 11,6 ppf; BTC; R3. Tekanan parsial kandungan CO<sub>2</sub> dan H<sub>2</sub>S pada kedalaman 2077-2573 m (6700-8300 ft) formasi Talang Akar sebesar 124,62 atm dan 0,01 atm dan *Basement* masing- masing adalah 144,17 atm dan 0,01 atm yang mengharuskan penggunaan material non API. *Grade casing* yang dipilih telah dilakukan perhitungan analitis dan didapatkan *safety factor* yang memenuhi standar. Total selisih biaya yang dikeluarkan lebih murah pada perencanaan *casing design* sumur usulan dengan sumur *existing* sebesar 137.903 USD sehingga lebih efisien jika *casing design* tersebut digunakan.

Kata kunci : *Burst, collapse, casing design, grade casing, tension.*

## ABSTRACT

*"VILA" field has 2 existing wells, namely "VILA-1" and "VILA-2". Further drilling will be 5 proposed wells including the "VILA-3", "VILA-4", "VILA-5", "VILA-6", "VILA-8". In the existing well of the "VILA" field, the casing grade used is not optimal, which does not pay attention to the CO<sub>2</sub> and H<sub>2</sub>S content found in the productive formation. So it is necessary to evaluate to obtain the optimal casing design and qualify requirements, so that it can be used as a reference in planning the next well casing design*

*Casing design evaluation using maximum load method which load consider on the casing such as burst load, collapse load, tension load and biaxial.*

*Results of the evaluation casing design of proposed conductor casing well a drive to revusal of 15 m (0-49.2 ft) whereas in existing wells up to a depth of 11 m (0-36 ft), surface casing is drilled to 300 m (0-984 ft) ) which uses the casing grade K-55; 106.5 ppf; BTC; R3 where existing well to 305 m (0-1001 ft) uses casing grade K-55; 94ppf; BTC; R3 , intermediate casing consists of 2 sections, section 1 (0–2500 ftTVD) using casing grade L-80; 72ppf, BTC; R3, section 2 (2500-3936 ftTVD) using casing grade P-110; 80.7 ppf, BTC; R3 where the existing well consists of 1 section to 1200 m (0-3937 ft) using casing grade N-80; 72ppf; BTC; R3, production casing consists of 2 sections, section 1 (0–5028.7 ftTVD) uses casing grade L-80; 47ppf, BTC; R3, section 2 (5028.7-7543 ftTVD) using casing grade N-80; 58.4 ppf, BTC; R3 where existing well consists of 1 section to 2064 m (0-6772 ft) using casing N-80; 53.5 ppf; BTC; R3, and the 2289.41–2733 m (7511.2–8968 ft) liner casing using casing grade SM22CR-110; 41ppf; PE where the existing wells use API standard casing grade N-80; 11.6 ppf; BTC; R3 . The partial pressure of CO<sub>2</sub> and H<sub>2</sub>S content at a depth of 2077-2573 m (6700-8300 ft) of the Talang Akar formation is 124.62 atm and 0.01 atm and Basement is 144.17 atm and 0.01 atm respectively which requires the use of material non-API. The selected casing grade has been carried out by analytical calculations and obtained a qualify of safety factor. The total difference in costs incurred is cheaper in planning the casing design of the proposed well with the existing well of 137,903 USD so that it is more efficient if the casing design is used.*

*Key words: Burst, collapse, casing design, grade casing, tension.*