Analisa tekno ekonomi pengembangan lapangan gas laut dalam di Indonesia dengan metode subsea-tieback = Techno economic analysis on deepwater gas field development in Indonesia using subsea-tieback method

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Abstrak

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Pengembangan lapangan gas laut dalam memiliki tantangan teknis, terkait fasilitas produksi dan teknologi untuk dapat memproduksikan migas pada kondisi lingkungan yang ekstrem. Disamping itu, biaya yang diperlukan lebih besar dibandingkan pengembangan lapangan laut dangkal. Dalam penelitian ini dilakukan analisa secara teknis dan ekonomis terhadap pengembangan lapangan gas laut dalam di Selat Makasar dengan metode subsea tieback, dengan memanfaatkan kapasitas tersedia dari floating production unit (FPU) yang sudah ada. Analisa teknis meliputi penentuan ukuran pipa (flowline) optimal, yang dapat memenuhi target deliverabilitas gas, memenuhi kriteria teknis lainnya, serta analisa flow assurance, khususnya mitigasi hidrat untuk menjamin keberlangsungan aliran fluida dari sumur bawah laut hingga ke titik jual. Dari analisa teknis akan didapatkan beberapa konfigurasi ukuran pipa dan mitigasi hidrat. Analisa ekonomi meliputi perhitungan biaya investasi untuk setiap opsi yang memenuhi kriteria teknis, kemudian dilanjutkan penghitungan parameter keekonomian berdasarkan aturan Production Sharing Contract (PSC) yang berlaku di Indonesia. Dengan harga gas 6 US$/mmbtu, didapatkan nilai Government Take (GT) 609 juta US$ dan Internal rate of Return (IRR) 15.13%. Sensitivitas analisis dilakukan dengan variasi harga jual gas dan mengubah besaran kontraktor split untuk meningkatkan IRR sehingga dapat mencapai nilai yang masih dapat diterima dari sisi Kontraktor. Untuk mendapatkan IRR yang lebih besar dari 20%, diperlukan kontraktor split sebesar 48%. Hasil analisa keekonomian dapat menjadi pertimbangan dalam penentuan besaran kontraktor split untuk pengembangan lapangan gas laut dalam.
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ABSTRACT
Deepwater gas field development has technical challenges, related to production facilities and technology that can be used for producing oil and gas in the extreme ambient conditions. The required cost is also higher than shallow water. This research analyzed technical and economical aspect of deepwater gas field development at Makasar Strait using subsea tieback method, which utilize the available capacity from existing Floating Production Unit (FPU). Technical analysis include selection the optimum flowline size, which meet the gas

deliverability and other criteria as well. It also cover the flow assurance analysis, particularly hydrate mitigation, to ensure the flow continuity of oil and gas from subsea well to the sales point. Economic analysis include the calculation of investment cost on each option that meet the technical criteria above. Then continued with calculation of economic parameter based on applicable Indonesia Production Sharing Contract (PSC) scheme. With gas price of 6 US$/mmbtu, will give Government Take (GT) of 609 million US$ and Internal rate of Return (IRR) 15.13%. Sensitivity analysis has been done by varrying the gas sale price and changing the percentage of contractor split to increase the IRR to meet the value that still acceptable from Contractor side. Contractor split of 48% is required to achieve IRR higher than 20%. This economic analysis result could become a consideration in defining the percentage of Contractor Split for deepwater gas development.;Deepwater gas field development has technical challenges, related to production
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