عنوان مقاله:

Hydrodynamic Modeling and Evaluation of Partial Substitution of Cushion Gas During Creation of Temporary Underground Gas Storage in an Aquifer

محل انتشار:

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خلاصه مقاله:

The flaring of associated gas remains a problem for oil and gas fields that are difficult to access and remote from the infrastructure. Active development of oil and gas production in Eastern Siberia has led to the fact that transportation capacities cannot keep up with field development. Increased flaring of associated gas leads to a significant increase in greenhouse gases such as carbon dioxide and methane. A possible solution to this problem is to store gas in the aquifer of the field for its future sale and monetization through the main gas pipeline. This paper analyzes the main technologies of associated gas utilization and reveals the problem of remoteness from gas transportation infrastructure of hard-to-reach fields. An effective technology to solve this problem is the creation of temporary underground storage of associated gas in the aquifer of the field. The results of hydrodynamic modeling of realization of this technology with partial replacement of cushion gas showed that joint injection of carbon dioxide and nitrogen before hydrocarbon gas allows to increase the ratio between produced and injected gas, which indicates its greater efficiency. It is recommended that in order to implement the technology, when selecting a geological injection site, to focus on aquifers with a temperature above ۳۱.۲ , which will allow carbon dioxide to remain in a supercritical state in reservoir conditions.

کلمات کلیدی:

Associated gas, underground gas storage, Cushion gas, aquifer