

West Texas San Andres dolomite water alternating gas (WAG) CO₂ flood performance data were used to derive P10, P50, and P90 CO₂ storage efficiency factors of 0.76, 1.28, and 1.74 Mscf/STB (stock tank barrel) of original oil in place. Median CO₂ storage efficiency factors from continuous CO₂ injection following conventional waterflood varied ...

Introduction; Oil storage terminals play a critical role in the global energy infrastructure by providing essential facilities for the storage, handling, and distribution of crude oil and petroleum products. In recent years, the industry has witnessed significant advancements driven by emerging technologies and evolving trends, aiming to enhance operational efficiency, ...

The WAG flooding can increase ultimate oil recovery and primary CO₂ storage efficiency due to the large swept volume and the high displacement efficiency, but it will cause a significant pressure decrease (40 %), and thus a certain amount of CO₂ injection is needed in the subsequent geological storage to maintain the reservoir pressure stable.

DOI: 10.1016/j.fuel.2024.130870 Corpus ID: 267474495; Investigation on enhanced oil recovery and CO₂ storage efficiency of temperature-resistant CO₂ foam flooding @article{Chen2024InvestigationOE, title={Investigation on enhanced oil recovery and CO₂ storage efficiency of temperature-resistant CO₂ foam flooding}, author={Xin Chen and ...

This paper details best practices for carbon dioxide (CO₂) storage resource estimates in conventional hydrocarbon reservoirs associated with enhanced oil recovery (EOR) via CO₂ flooding (CO₂ EOR). The recommendations are based on U.S. Department of Energy-funded research through the Energy & Environmental Research Center using real-world ...

Global tight-oil reserves are abundant, but the depletion development of numerous tight-oil reservoirs remains unsatisfactory. CO₂ injection development represents a significant method of reservoir production, potentially facilitating enhanced oil recovery (EOR) alongside CO₂ storage. Currently, limited research exists on advanced CO₂ injection and well ...

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In this study, a quantitative index of containment efficiency is proposed, which is related to both the containment safety and the water inflow into storage caverns for the safe and economic operation of underground water-sealed oil storage caverns, i.e., the degree of containment safety that can be provided by the unit water inflow into ...

Gorecki et al. (2015) also made an analogy with the oil industry whereby CO₂ storage efficiency E starts low, rises rapidly and then levels off in time in the same manner as oil recovery, hence oil recovery factor, R_f , in oil reservoirs. Furthermore, as in the oil industry, storage optimization schemes can be implemented in the same manner as ...

This work uses pilot examples of CO₂ enhanced oil recovery to analyze whether and under which circumstances it is energetically favorable to sequester CO₂ through ...

CO₂ Storage prospective Resource Estimation Excel aNalysis (CO₂-SCREEN) User's Manual Sean Sanguinito^{1,2}, Angela L. Goodman¹, Foad Haeri^{1,2} ¹ U.S. Department of Energy, National Energy Technology Laboratory, 626 Cochrans Mill Road, Pittsburgh, PA 15236 ² U.S. Department of Energy, National Energy Technology Laboratory, Leidos Research Support Team, 626 ...

Tanker ships are used for temporary storage when land storage is at capacity, making it the most expensive option. ¹ There is a minimum operating level of crude oil that cannot be removed from pipelines, refinery tanks, overall system without difficulties. ² In 2020, the coronavirus pandemic dramatically reduced the demand for oil, which was ...

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From the results, both oil recovery and CO₂ storage efficiency in the near-miscible conditions were much better than the immiscible conditions in the case of a vertical system containing a gravity segregation environment. Ultimately, in the relationship between oil recovery and CO₂ storage efficiency, from this study, we propose that they ...

The estimation of CO₂ storage capacity in deep geologic formations is a pre-requisite for an efficient and safe application of Carbon Capture and Storage (CCS). The evaluation of storage resources for CO₂ geological sequestration is a challenging task and has been tackled using several static algorithms and dynamic methods, on a variety of scales ...

The utilization of our proposed ANN models has proven highly effective accuracy in predicting CO₂-EOR and storage performance. Notably, the tested R^2 values for Cumulative ...

Residual oil zones (ROZs) have high residual oil saturation, which can be produced using CO₂ miscible flooding. At the same time, these zones are good candidates for CO₂ sequestration. To evaluate the coupled CO₂-EOR and storage performance in ROZs for Water-Alternating-CO₂ (WAG) flooding, a multi-compositional CO₂ miscible model with ...

CO₂ sequestration in a depleted oil reservoir--maximizing its storage capacity and making it a storage site--is a new process beyond EOR. Current studies have evaluated injection strategies to achieve CO₂ storage based on residual oil and water at this stage in depleted reservoirs.

CO₂ injection development represents a significant method of reservoir production, potentially facilitating enhanced oil recovery (EOR) alongside CO₂ storage. Currently, limited research exists on advanced CO₂ injection and well pattern adjustment aimed at improving the oil recovery and CO₂ storage within tight-oil reservoirs.

The recovery factors from these projects range between 5 and 25% of the initial oil in place, with an average recovery of about 13% after 3 pore volume of fluid injection (CO₂ and water). Table 2. Parameters used to construct the oil recovery histories in Fig. 6. Fig. 6.

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Fig. 11 presents 3D simulation results for oil recovery and CO₂ storage efficiency, for pure CO₂ and ethanol-treated CO₂ injection into oil represented by a C₆-C₁₀ mixture. Results are presented for 9.0, 11.7, and 14.5 MPa, which are immiscible, near-miscible, and miscible pressures, respectively, for pure CO₂ and a C₆-C₁₀ mixture ...

In this work, a numerical model for multiphase flow in shale oil reservoirs is developed to investigate the impacts of nano-confinement and oil composition on shale oil ...

Other studies have investigated the effects of different injection strategies on simultaneous enhanced oil recovery and gas storage efficiency in ultra-low permeability reservoirs, shale oil, shale gas, and coal seams (Li et al. 2021; Kou et al. 2021; Tayari and Blumsack 2020; Syed et al. 2022; Ren et al. 2023).

Crude oil storage is an important part of the oil production process. Oilfield developments usually consist of many producing wells connected to fluids handling systems for treating the crude oil to sales specification before export or sale to refineries. ... Emulsification of Indian heavy crude oil in water for its efficient transportation ...

Predictions of the seepage field of underground water-sealed oil storage caverns (UWOCs) are significant for guiding the work of water curtain systems, ensuring the safety of oil storage operations, and reducing the operational cost of oil storage. Based on the field time-series monitoring data of a UWOC project, a long short-term memory (LSTM) model was used to ...

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In this work, we studied the feasibility of CO₂ foam for co-optimizing enhanced oil recovery and CO₂ storage in a high-salinity carbonate formation. The simulated hydrodynamic model is a depleted ...

Simulation results show that storage-driven CO₂ EOR is superior to conventional CO₂ EOR in expanding the sweeping efficiency, which greatly increases oil recovery, especially during the late oil production period. This finding suggests that DME favors sustainable oil recovery by assisting conventional CO₂ EOR.

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