

The First Regional Symposium on Carbon Management

Title:

The Rangely Weber Sand Unit A Long History of CO₂ Injection

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Abstract:

The Rangely Weber Sand Unit is located in the northwest corner of Colorado on the north plunge of the Douglas Creek Arch between the Piceance and Uinta Basins. With 861 million barrels of oil produced to date, it carries the distinction of being one of the largest oilfields in the Rocky Mountains. The field is a structural trap consisting of a large anticline which dips steeply to the south and southwest and gently to the north and northeast. It is eleven miles long and four miles wide to the outermost boundaries, and it encloses 19,153 acres of surface area. The field has been under a large waterflood since 1958, and starting in 1986, a significant portion of the field has been under CO₂ flood.

Since inception of the CO₂ flood, more than 90 MM barrels of CO₂ incremental oil have been produced, along with 9 MM barrels of NGL. A total of 1.23 BCF of CO₂ has been injected into the reservoir in nearly 20 years, with 470 MMBCF of that being purchased from a gas processing facility in Wyoming. The remainder of the injected volume is recycled CO₂. With this long history of injection and the volumes of CO₂ handled, many important lessons have been learned along the way.

This presentation focuses on the background and history of the Rangely Weber Sand Unit CO₂ Project, with emphasis on operational aspects of the project, including engineering and monitoring and practical learnings from implementation. Facilities issues and regulatory compliance will also be discussed, but with less detail. Recent projects are also discussed, highlighting the impact they've had on the field decline. This paper does not go into the scientific work done to evaluate the reservoir for CO₂ injection or any subsequent simulation work.