

## **Application of a Multiple Well-Injection Approach for CO<sub>2</sub> Sequestration in a Saline Reservoir**

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### **Summary**

The high-performance parallel computing scheme has already been increasingly recognized as an attractive alternative method to resolve the large-scale problems of CO<sub>2</sub> sequestration. This paper therefore conducts a parallel computation for simulating multiple well-injection scenarios and long-term CO<sub>2</sub> geologic sequestration in a saline aquifer (Figure 1a) based on the ECO2N module of the TOUGH2-MP that is the parallel version of TOUGH2 implemented by the MPI. The numerical performance of TOUGH2-MP is developed on an IBM Cluster 1350 which is composed of 404 nodes and 2 Intel Woodcrest 3.0 Ghz Dual-Core processors per node. Our results indicate that the high-speed parallel computing scheme enhances the modeling capability and shows the significant speedup for these large-scale modeling studies. Besides, this paper presents the ten well-injection approach that the procedure has been applied to build the 3D site-scale case and to explore the physical phenomenon (Figure 1b) in contrast to the single well injection approach. Simulation results further show that the multiple well-injection approach reduces the reservoir pressure effectively.

