

Water-rock Interaction of Enhanced Geothermal System

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At EGS system, production fluid geochemistry depends on mineralogy of reservoir rock and circulation system.

During closed-loop circulation test at Habanero EGS site, South Australia, Na, K and Cl concentration were gradually increasing

and higher than those of the previous open flow production test.

In this system, increasing of Na, K may be due to dissolution of feldspars of granite rock at reservoir depth.

Similar trend is shown in production well at Hijiori EGS site, Japan. In Hijiori system, at first 3 month of 2000-2002 long term circulation test, Na,K,Cl were increased and about half concentration of Habanero site. And Ca and SO₄ are slightly higher.

This difference is due to the circulation system. At Hijiori, open loop system and injection fluid was supplied from near river water. Then, anhydrite (CaSO₄) was dissolved.

On the other hand, at Habanero, closed loop system and no fluid was supplied during circulation. In addition the chemical composition of the granite in which the fluid is circulating is also different, with low-calcium granite at Habanero and high calcium

tonalite/granodiorite at Hijiori.

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