

NUMERICAL MODELING OF THE HIGH-TEMPERATURE TWO-PHASE RESERVOIR AT UENOTAI GEOTHERMAL FIELD, AKITA PREFECTURE, JAPAN

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Key Words:

Numerical modeling, high-temperature, two-phase, initial-state, history-matching, forecasts

ABSTRACT

A three-dimensional, integrated finite-difference numerical model was developed to forecast the behavior of the geothermal reservoir supplying a 27.5 MW development at Uenotai in Japan. The model was calibrated in two stages: (1) by matching the initial-state temperature distribution of the field; and (2) by matching enthalpy and flow rate transient histories from a number of wells. Reservoir behavior was forecasted under various production/injection scenarios. The results obtained from these forecasts indicate that the reservoir can provide enough steam for the 27.5 MW power plant for 30 years with the drilling of two additional make-up production wells.

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