

QUANTITATIVE VERIFICATION OF THE HYDROGEOLOGICAL MODEL OF THE MOFETE GEOTHERMAL FIELD, CAMPANIA, ITALY

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ABSTRACT

The purpose of this study was to verify quantitatively and to refine the conceptual hydrogeological model of the Mofete Geothermal field near Naples, Italy, using a numerical simulator. A three-dimensional, two-phase numerical simulation model of the reservoir was developed based on the conceptual model and the interpretation of the long-term interference test data. The measured temperature distribution was matched, by trial and error, with the temperature distribution calculated by the model after a simulated geological time, without any production, thus validating the conceptual model. The locations and extent of recharge and discharge and the permeability distribution were the main fitting parameters. The numerical modeling of the initial state helped refine the conceptual model by indicating that: (a) there is very little communication between the layers; (b) fluid flows from NE to S through the system in the 275 to 850 m level; and (c) the heat source underneath the field is of a limited areal extent.

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