

# MODELING DISCHARGE REQUIREMENTS FOR DEEP GEOTHERMAL WELLS AT THE CERRO PRIETO GEOTHERMAL FIELD, MEXICO

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## ***Keywords:***

*Geothermal reservoir, heat loss, numerical modeling, flow rate*

## **ABSTRACT**

During the mid-1980's, Comision Federal de Electricidad (CFE) drilled a number of deep wells (M-200 series) at the Cerro Prieto geothermal field, Baja California, Mexico to investigate the continuation of the geothermal reservoir to the east of the Cerro Prieto-11 and HI production areas. The wells encountered permeability at depths ranging from 2,800 to 4,400 m but due to the reservoir depth and the relatively cold temperatures encountered in the upper 1,000 to 2,000 m ( $< 50^{\circ}\text{C}$ ), it was not possible to initiate discharge in all of the wells.

The wells at Cerro Prieto are generally discharged by injecting compressed air below the water level using 2-3/8-inch tubing installed with either a crane or workover rig. The impact of heat loss on the stimulation process is believed to be significant and was investigated using both a numerical model of the reservoir/wellbore system and steady-state wellbore modeling. The results from the study show that if flow rates of at least 300 liters/minute can be sustained, the well can probably be successfully stimulated; this is consistent with the successful stimulations of wells M-202 and M-203. If the flow rate is closer to 60 liters/minute, the heat loss is significant and it is unlikely that the well can be successfully discharged. These results are consistent with the unsuccessful discharge attempts in wells M-201 and M-205.

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