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# CERRO PRIETO GEOTHERMAL FIELD MODELING

## (MODELADO DEL CAMPO GEOTHERMICO DE CERRO PRIETO)

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## ABSTRACT

An initial thermodynamic steady-state numerical model has been developed for the Cerro Prieto geothermal field. This model reasonably matches in a three dimensional manner the production enthalpy and the reservoir pressure-temperature histories for the existing wells in each element of the net in showing that the internal fluid and heat flows depend on the structural system as well as the recharge pattern.

For the 1873-1988 period, it also shows that the reservoir was initially in a liquid dominated state and recharged from the main fault systems in the deeper level next to the basement.

The Cerro Prieto zone one presents a shallow infiltration due the sleeder clay layer that surrounds the upper west side of the system.

The central zone (mainly Cerro Prieto three) is fundamentally confined by low porosity and permeability values as well as secondary faults, and shows a tendency to increased steam saturation that produces high-enthalpy fluids according to the extraction rates needed by the generation plants.

These results were extrapolated for a period of 25 years from 1989 showing the possibility to successfully extend the field to the east zone named Poligono Hidalgo.