

CORROSION VS. TEMPERATURE: FIELD DEVELOPMENT OPTIONS AT ONIKOBE GEOTHERMAL FIELD, MIYAGI PREFECTURE, JAPAN

C. W. Klein¹, J. R. McNitt¹, S. K. Sanyal¹, M. Abe², and S. Nakanishi²

¹GeothermEx Inc., 5221 Central Avenue, Suite 201, Richmond, California, 94804 USA

²Electric Power Development Company, Ltd., Tokyo, Japan

Keywords:

Corrosion, acid water, andesites, Onikobe, Japan, geochemical

ABSTRACT

Onikobe is the site of a 12.5 MW power plant which has operated since March, 1975. Acid waters, local declines of pressure and enthalpy, and anomalous well performance has made it a challenge to maintain production. Hydrogeologic modeling shows that the field is centered on a structural dome within the Onikobe caldera, in a structural depression, which overlies an upflow of acid water. Following upflow the acid water spreads within fractured andesites, which dip away from the center of the dome, mixing with more dilute, cooler water, and becoming less acidic. The andesites have near-uniform fracture permeability in all areas, but in some wells have been partly cased-off. There may exist preferential acid water flow paths along faults leading to the NE and NW. The task of future exploration and development is to test this model, seeking production in the andesites in any direction from the center, avoiding the NW and NE fault zones, and balancing the loss of temperature against lower corrosivity.

[For a copy of this paper please e-mail us at mw@geothermex.com](mailto:mw@geothermex.com)