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GEOHERMAL POTENTIAL OF THE
REDONDO CREEK DEVELOPMENT AREA,
BACA PROSPECT, NEW MEXICO

Summary

Integration of field mapping data, well stratigraphy, and static temperature profiles with productivity of development wells indicates that steeply dipping faults may be the primary contributor to permeability/production of the Baca Prospect (Behrman and Knapp, 1980; NJS0-023). Based on cross sections oriented perpendicular to the dominant structural trend and assuming that the production zone is located between 3000 ft. below surface datum and the base of the Bandelier Tuff, areas of excellent potential (where fault zones of opposite vergence intersect), and good potential (adjacent to one steeply dipping fault zone) have been defined on the attached map. We recommend that future wells be targeted toward these areas.

Discussion

Detailed field mapping in the Redondo Creek area has defined the local structural framework. This field data combined with thermal profiles, stratigraphy, and lost circulation data suggest that production/permeability are directly related to the intersection of steeply dipping faults in the well course (Behrman and Knapp, 1980; NJS0-023). The spatial distribution and orientation of these structures indicates that the geothermal potential (productivity) of the Redondo Creek area can be subdivided into the following zones:

- (1) Excellent potential -- intersection of two steeply dipping fault zones of opposite dip orientation;
- (2) Good potential -- areas adjacent to one steeply dipping fault zone; and
- (3) Moderate to poor potential -- areas characterized by the absence of steeply dipping faults.

Assuming that the production interval is located between 3000 ft. below surface datum and the base of the Bandelier Tuff, these zones can be defined on cross sections oriented perpendicular to the regional structural trend (Fig. 1). The width of each zone is presumed to extend several hundred feet around each fault.

The attached map, produced by the vertical projection of "potential" zones to the surface, shows the location of producing/

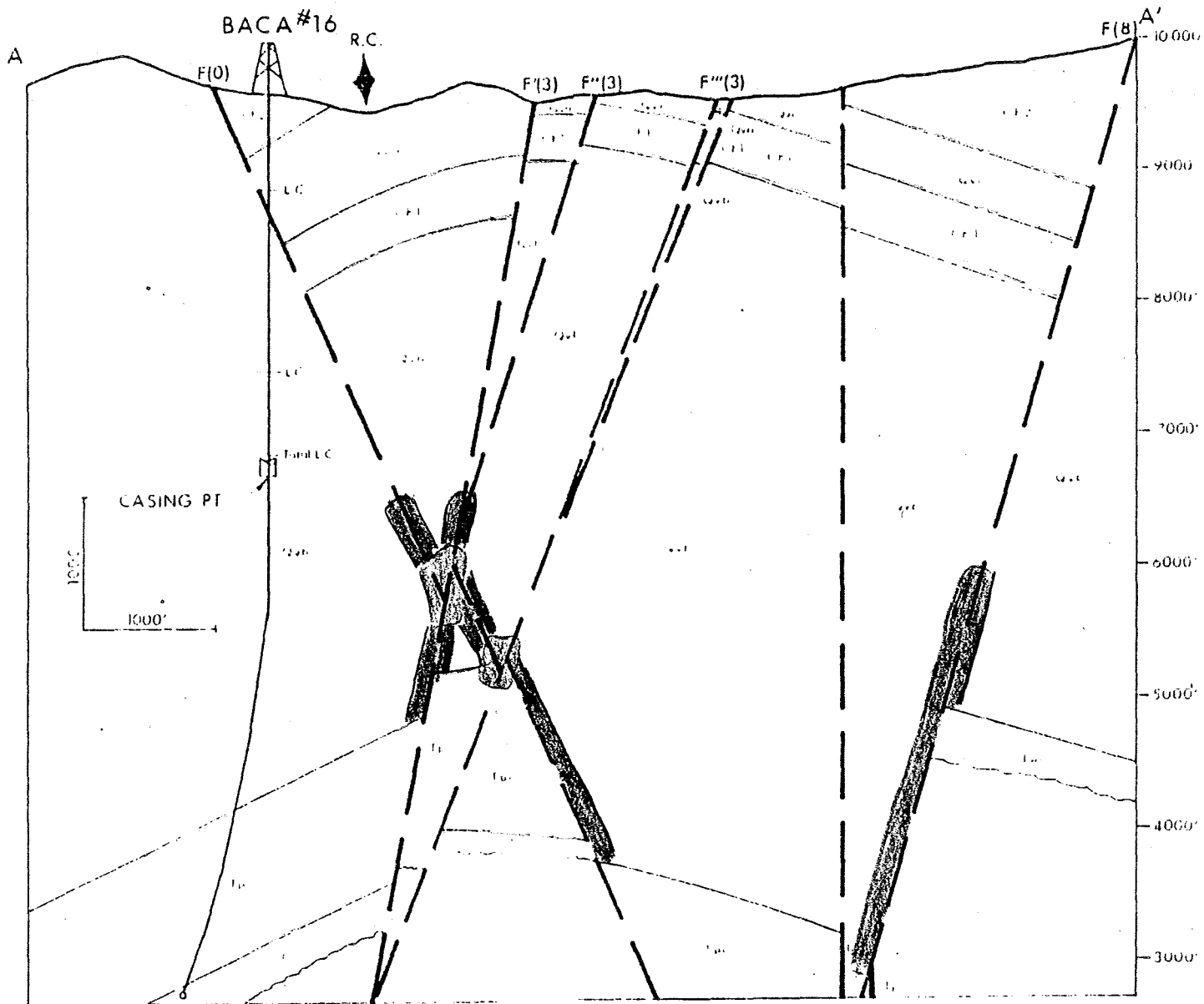


FIGURE 6. Cross Section through Baca 16;
A-A' on Figure 1.

FIGURE 1. Cross section through Baca 16 (from Behrman and Knapp, 1980). Productivity/permeability is subdivided into: (1) excellent potential (shown in red; intersection of 2 fault zones of opposite vergence); and (2) good potential (shown in yellow; zone adjacent to one steeply dipping fault).

permeable structures along the entire length of the Redondo Creek development area. We recommend that all future wells be targeted towards either the "excellent potential" or "good potential" zones.

PGB/RBK:njr