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FOUR POSSIBLE GEOTHERMAL PROJECTS

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Public Service Company of New Mexico (PNM) has been reviewing geothermal development both in the western region of the United States and, more specifically, New Mexico, for the past several years. Discussion today will concentrate on the major geothermal activities the Company has been involved in. The activities can be categorized into four areas: the Valles Caldera/Union Oil geothermal development, the Diablo Exploration, Inc. (Diablo) geothermal project, early communications with field developers, and continuing review of the Los Alamos hot/dry rock project.

VALLES CALDERA/UNION OIL DEVELOPMENT

PNM has been involved in an information exchange relationship with Union Oil on the Baca Location No. 1 (the actual private property the Valles Caldera is situated in) for five to six years. Extensive deep well drilling and reservoir assessment have been performed in the area by Union Oil, one of the world's largest developers of geothermal energy. Visits by PNM personnel to the site have enabled the company to observe Union activities and to follow development.

PNM has performed plant economic and preliminary alternative transmission routing studies for the Baca location. We are currently involved in contractual negotiations concerning pricing philosophy, escalation, liabilities, and so forth. Both companies have also replied to the ERDA "Expression of Interest Request" for a 50-MW demonstration plant at the Baca location. PNM fully supports the EPRI and SDG&E 50-MW demonstration facility. We believe this will be a significant milestone in geothermal development. However, in the Jemez Mountain (the Valles Caldera) also lies a significant geothermal reservoir. To simply let this reservoir lie without attempting plant development will not further either New Mexico's geothermal development or the demonstration of geothermal development in California and the entire nation. We hope ERDA will realize this and support demonstration projects in at least the better known reservoirs.

The Baca location is definitely the most developed geothermal area in New Mexico. Utilization of this site for geothermal electrical production would definitely help demonstrate geothermal potential in the state of New Mexico.

DIABLO EXPLORATION INC.

Diablo and PNM signed a preliminary agreement in which Diablo will obtain and develop a site and construct a 50-MW plant. PNM will build the transmission line and purchase capacity and energy at an agreed price. The preliminary agreement is basically subject to economic feasibility, permit acquisition, and environmental restraints.

Diablo is currently assessing New Mexico geothermal anomalies and talking to developers and lease holders. PNM and Diablo are also discussing possible PNM involvement in earlier phases of the project.

Diablo is seeking an ERDA geothermal loan guarantee for the field development phase and is completing the required paperwork. PNM may perform the initial environmental work required for the loan guarantee.

EARLY COMMUNICATION WITH FIELD DEVELOPERS

As part of PNM's budgeted geothermal R&D program for 1977, we have contacted various field developers and lease holders in the state of New Mexico to ascertain their development status, impediments to development, and projected plans for future development work. We felt that discussions between the utility and developer early in the field development phase were essential for planning purposes for all parties concerned.

Generally, what developers ideally would like to see, in order of preference, is front end utility capital in field development, contractual commitment as early as possible with as little field verification as required, a general letter of intent, and information on when the utility will be ready to purchase steam or power, and at what price.

Alternately, what the utility ideally would like to see, in order of preference, is full field verification as soon as possible with as little contractual commitment as required, information on the developer's anticipated cost of production and escalation, and information on the anticipated commercial availability of the geothermal field with projected steam or electrical power pricing, with escalation.

It does appear that two of the key criteria on contractual pricing are an assessment by the utility on what it can economically pay and in what year (specific transmissions cost should be included) and an assessment by the developers as to the price of their product and the anticipated escalation of that price.

DRY/HOT ROCK PROJECT REVIEW

Los Alamos Scientific Laboratories (LASL) and PNM have established an information exchange program. Specifically with geothermal, PNM personnel have met with LASL geothermal people, visited their drilling site, and are continually reviewing their project achievement. Current breakthroughs in water recovery (approximately 92% of water injected) and upcoming heat exchanger tests are activities PNM is definitely following with interest. Although joint venture between LASL and PNM is not beyond an expression of interest stage, it is anticipated that LASL electrical generation from hot/dry rock will occur.